



EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

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Cover Picture

This 56 pound bell weight is marked at its base West Riding County Council 1898 and Pontefract District. The center of the weight is marked 512 and the top of the handle is marked 56 LB. The marks on it are crown VR, ER, and GR. There are dates from 1898 to 1937 near the hatch marks. The weight measures 13 inches tall and is 7¼ in diameter at the bottom.

Jack Young Collection.

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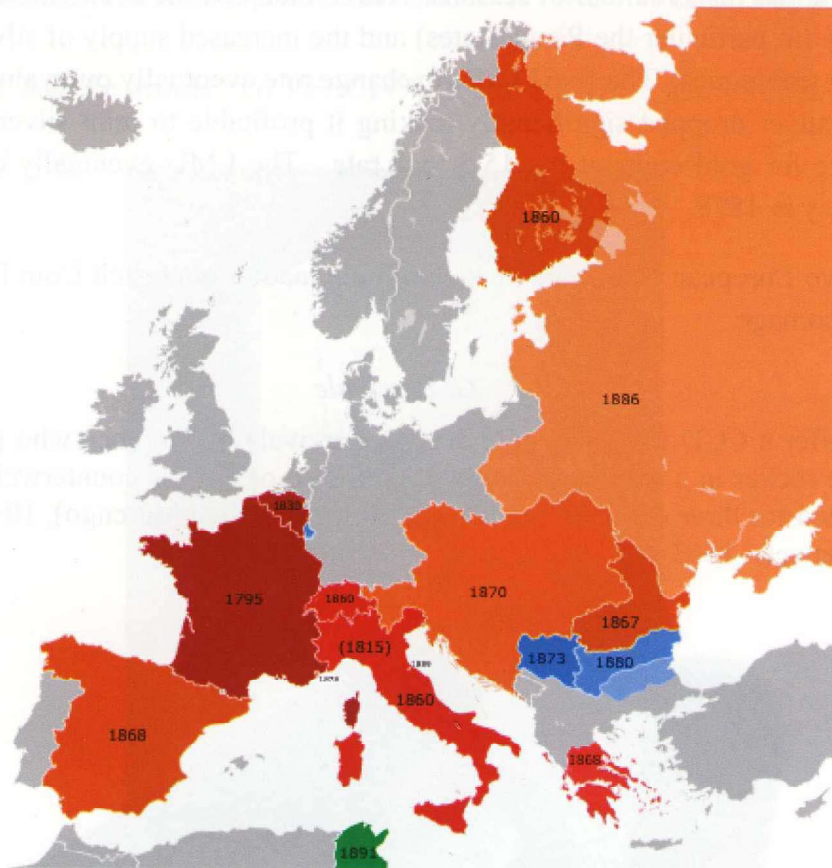
The Latin Monetary Union and Two European Scale Makers' Response

BY ERIC SOSLAU & MICHAEL FOSTER

The first attempt at the Euro!

The Latin Monetary Union (LMU) was a 19th-century attempt to unify the currencies of European countries into a single currency. A currency that could be used in all of the member states, at a time when most national currencies were still made out of gold and silver.

Established in 1865 and disbanded finally in 1927, many countries minted coins according to the LMU standard even though they did not formally accede to the LMU treaty.



**Contractual LMU States (red) and Associated states (other colours)
between 1866 and 1914.**

The LMU adopted the specifications of the French gold franc, introduced by Napoleon I in 1803. The French franc was struck in denominations of 5, 10, 20, 40, 50 and 100 francs. The 20 franc coin, 6.45161 grams of .900 fine gold struck on a 21 mm flan, was the most common.

By treaty dated 23 December 1865, France, Belgium, Italy and Switzerland formed the Latin Monetary Union. They agreed to a combined gold and silver standard (Bimetalism) with a gold-to-silver ratio of 15.5 to 1. One LMU Franc represented 4.5 grams of fine silver or 0.290322 grams of fine gold.

The four contracting states struck freely exchangeable gold and silver coins according to common specifications. The LMU facilitated trade between the different countries by setting the standards by which gold and silver currency could be minted and exchanged. This meant a French trader could accept Italian Lire for his goods with confidence that it could be converted back to a comparable amount of francs.

Greece joined the LMU on April 10, 1867, following the International Monetary Conference. Any country was guaranteed admission if they agreed to abide by the treaty.

Austria-Hungary refused to join the LMU because it rejected Bimetallism, but signed a separate monetary treaty with France on December 24, 1867, whereby both states agreed to accept the other's gold coins at specified rates. The Austria-Hungary 8 florin matched the specifications of the French 20 francs.

For more information on the Latin Monetary Union please see LMU reference sites:

https://en.wikipedia.org/wiki/Latin_Monetary_Union and http://www.unionlatine.com/lmu_all_countries.php.

The LMU eventually failed for a number of reasons. These included the debasement of some member's currency by their treasury (in particular the Papal States) and the increased supply of silver from new discoveries and improved refining techniques. The fixed LMU exchange rate eventually overvalued silver relative to gold. In 1873 the value of silver dropped significantly making it profitable to mint silver coin made to the LMU standard and exchange for gold coins at the 15.5 to 1 rate. The LMU eventually converted to a pure gold standard for its currency in 1878.

In this environment two European coin scale makers of note made Counterfeit Coin Detector (CCD) offerings to test the LMU gold coinage.

G. Percivale

Possibly the first to offer a CCD for LMU gold was G. Percivale of Florence who produced a pocket sized, handy and easy to use rocker in a mahogany case. It consisted of a brass counterweight and a steel arm with platters/contours defined for three different gold coins: 20 Liras (called Marengo), 10 Lires and 5 Lires (which were only produced between 1863 and 1878).



G. Percivale CCD for LMU gold coins

The platter/contour closest to the fulcrum was calibrated for the heavier gold coin and labelled '20 LIRE', the more distant for the '10 LIRE' and '5 LIRE'.

Overall Dimensions: Length: 175 mm, Width: 55 mm, Depth: 15 mm



G. Percivale CCD with labelled platters/contours for '20 LIRE', '10 LIRE' and '5 LIRE'

The brass counterweight has the words "G. PERCIVALE / FIRENZE" and "PESA- MONETE / PRIVILEGIATO" inscribed:



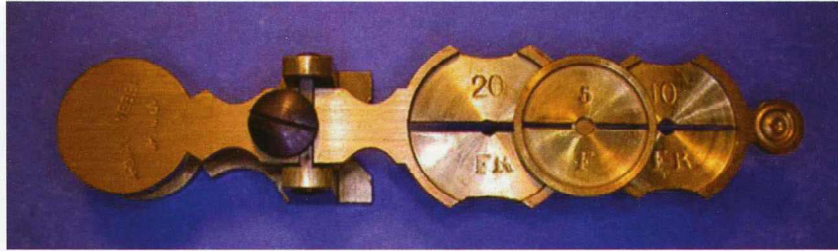
G. Percivale CCD with counterweight labels: "G. PERCIVALE / FIRENZE" and "PESA- MONETE / PRIVILEGIATO"

This instrument was manufactured in Florence at the Percivale Factory that operated between 1863 and 1890. It could verify not only the Italian gold coins, but also the French, Belgian and Swiss Francs and the Greek Drachma. There is a reported version of this CCD with Franc labels instead of Lire.

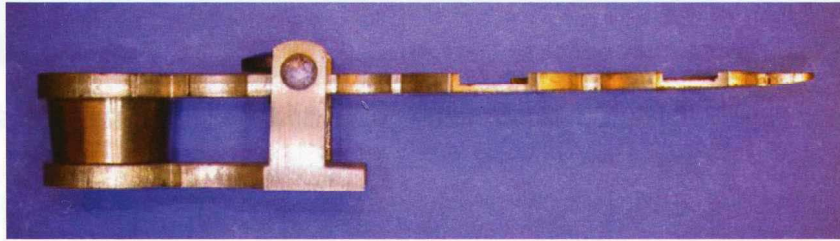
Philip Jacob Maul

The second scale maker was Philip Jacob Maul who manufactured an LMU Franc CCD most likely in the 1877 to 1878 time frame:

Rocker Dimensions: Length: 100 mm, Width: 22 mm, Height: 17 mm



Ph. J. Maul CCD for LMU gold coins made for Armand Weber, a Belgian Optician



The rocker has two platters labelled '20 FR' and '10 FR' and an insert that fits into the 10 FR platter labelled '5 F'.

Retailed by Armand Weber, a Belgian Optician whose name is found on the poise:

This instrument was sold under the name "Chrysoscope" which is found on the box label.



'ARMAND WEBER / OPTICIEN'



In the 19th century a Chrysoscope was a new device to detect the presence of gold! This one would test French, Belgian and Swiss gold francs, Italian gold lires and eventually Greek gold drachmas and other European gold coinage from states which were part of the LMU or which made gold coins to the LMU standards.

So the comment on the LMU being a first attempt at the Euro was a little tongue-in-cheek, but it is interesting that as early as 1865, European countries were trying to find a way to promote inter-state commerce using a more common currency approach. It made the coin scale manufacturer's job a little easier and expanded the market for a single CCD design to multiple countries.

Reference:

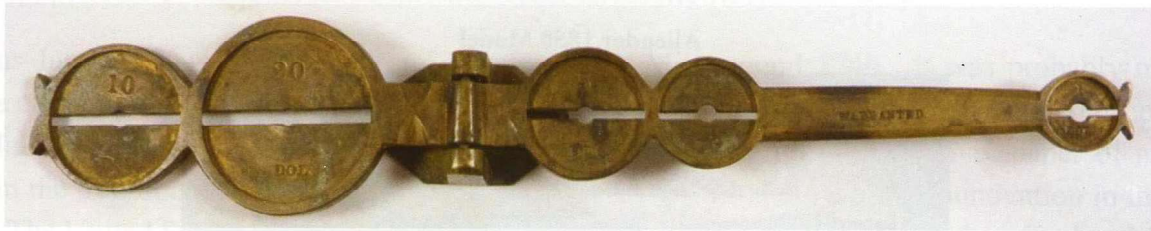
LMU Map of Europe - <https://commons.wikimedia.org/w/index.php?curid=26543646>

American Eagle Gold Counterfeit Coin Detectors, A New Model of Allender's 5-coin CCD

BY MICHAEL FOSTER

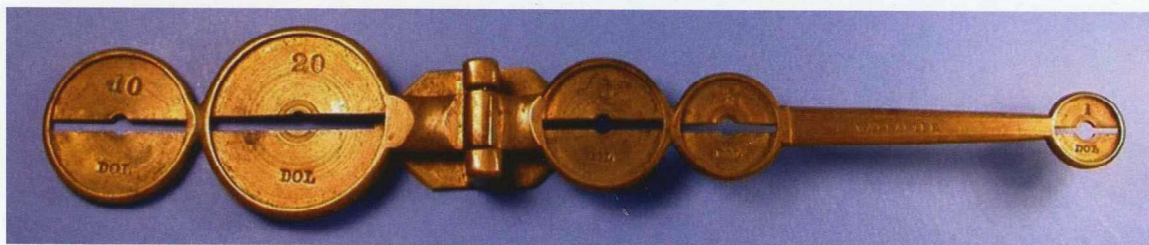
The author in his article on *American Eagle Gold Counterfeit Coin Detectors, A New Maker and Maker mark* in the ISASC Equilibrium, 2015 Issue No. 2, pp.4156-4160, discussed Increase Wilson as the early maker of John Allender Counterfeit Coin Detectors (CCDs) invented and manufactured to test the American Eagle family of the Double Eagle \$20, Eagle \$10, Half-Eagle \$5, Quarter-Eagle \$2 ½, and the Gold \$1 Dollar coins.

The recorded original Allender 1850 Model had five in-line pans labelled for '20 DOL', '10 DOL', '5 DOL', '2½ DOL' and '1 DOL', with gauge slots. This rocker was introduced in 1850:



Allender 1850 Model

A previously unrecorded variant of the Allender 1850 Model five-coin CCD has recently come to light. A variant not documented in *U.S. Coin Scales and Counterfeit Coin Detectors* by Eric P. Newman and A. George Mallis:



Allender 1850 Model Variant

The Variant appears to the author to be a prototype of Allender's patent made by Increase Wilson with similarities to his own American Eagle CCD Rocker with inserts:



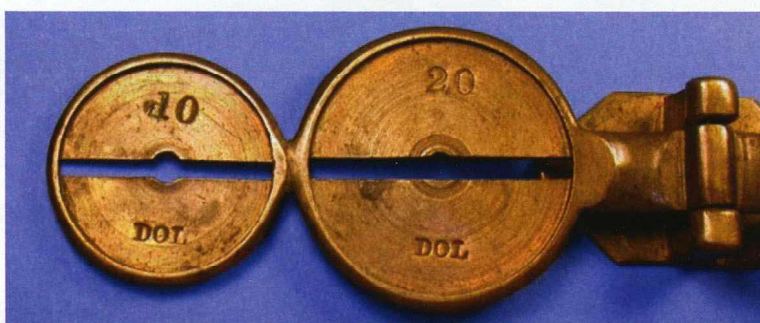
Increase Wilson's American Eagle CCD Rocker with Inserts

The similarities include the base style, pivot and columns and particularly the size and style of labelling on the pan and inserts with numerals and 'DOL'.

When comparing the new Variant to the 1850 Model made for Allender by Wilson, there is an additional similarity in the "WARRANTED" labelling on the beam. The differences when compared to Allender's recorded 1850 Model include the lack of finials which Wilson didn't use on his own CCD designs, the edge style on the pans (rounded versus sharp/square):



Allender 1850 Model



Allender 1850 Model Variant

and the beam style between the '2 ½ DOL' and '1 DOL' Platters;



Allender 1850 Model



Allender 1850 Model Variant

where the beam has been widened in the production 1850 Model from the Variant.

Notes:

The author would like to thank Jan Berning for photos of her 1850 Model and Steve Beare for selling the new Allender Model 1850 to the author on his birthday at the Katz's Mid-Atlantic Get Together.

Preserved Weighbridge in Maidstone, Kent, UK

BY MIKE SHARPE

Maidstone is the County Town of Kent, England's south-easternmost county.

It has a great deal of history, some of which stems from the papermaking industry.

From the late 1600s, the major technical advances in the way in which writing materials were made and distributed underpinned the Industrial Revolution.

One significant location in the development of paper for writing (and in fact for some surprising other uses) was Turkey Mill. This is a large group of buildings situated on the River Len about a mile east of Maidstone town centre, upstream of where it flows into the wider River Medway.

The famous James Whatman acquired and developed the Mill around 1740. It was probably named after Turkey the country, and was one of dozens of water-mills located in the valleys of the Len, the Loose stream and the Malling stream. Through technical innovations, Whatman produced 'wove' paper of much better quality than the traditional 'laid paper', and he and his successors led the world in innovation in this strategic material.¹ The United States Constitution of 1776, was apparently written on paper from Turkey Mill.

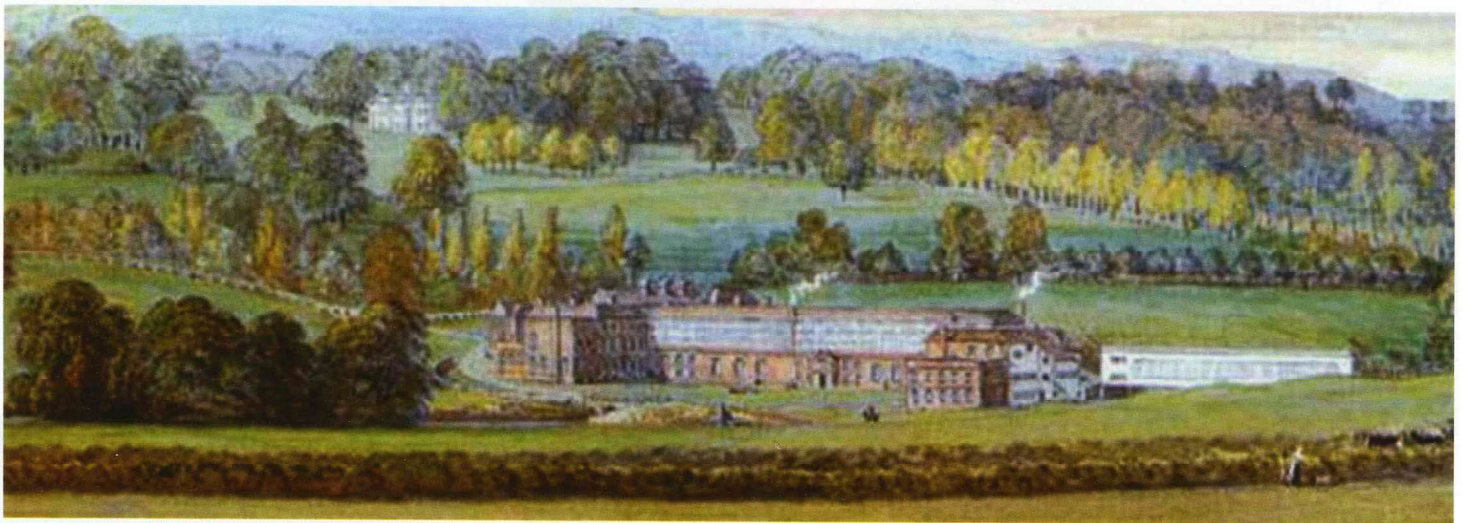


Figure 1. ▲▲ Detail from Paul Sandby's painting of *Mr Whatman's Mill*, clipped from <http://www.vintagepaper.co.uk/the-history-of-j-whatman-fine-art-paper>

The site is no longer used for papermaking, and has been turned into a business park, with sympathetic use of the old industrial buildings for professional services offices and a conference and wedding centre.²

One nice touch is the preservation of the weighbridge mechanism, possibly dating from the 1950s, in an unobtrusive and rather surprising way, there for any passer-by to view and muse upon.

It is an Ashworth Ross vibrating steelyard mechanism, with ticket-printer, and a plate about 24 feet by 9 feet. Although I photographed the site on a public holiday, the car in the picture shows that what remains of the plate can be used as office parking. The weighbridge is no longer in working order, and the likelihood is that the headwork, freshly painted in red, was moved from its original position within a building and turned to face away from the plate, possibly during the conversion from storage to offices in 2002³.



Figure 2. ▲▲ An unusual parking-place for the offices!



Figure 3. ▲▲ The side view explains a lot!

As you may be able to see from the moss growing on it, life in the open air is not conducive to scientific accuracy. However, the identification plate is still visible, and as an historic artefact it is a great example of imaginative preservation outside the context of a museum.



Figure 4. ▲▲ Details of the weighbridge plate and the manufacturer's name in the surround.

The ticket-printing mechanism for commercial weighing was a much-needed innovation actually developed in the early 1900s. Most modern weighbridges these days would not function at all without the facility to print weighbridge documents and then process the information further by computer networks.



Figure 5. ▲▲ The preserved headwork, showing the unusual slot and push-button lever for printing the weight on cardboard tickets.

Ashworth-Ross of Dewsbury in Yorkshire UK was a well-known name in the British weighing industry when I was testing weighing machines as an Inspector of Weights & Measures in the 1980s and 1990s. From my patchy memory I recall it became Weyrite(?) and disappeared in the 1990s. Please write in if you know better!



Figure 6. ▲▲ Details of the manufacturer's identification plate.

Notes:

1. http://www.wovepaper.co.uk/the_whatmans.html
2. <https://turkeymill.co.uk>
3. Maidstone Borough Council Planning Application / Approval MA/01/0357N

Spanish Coin Scale Boxes, Part 6a

BY LUDWIG RAMACHER & FRANCISCO VALLÉS

With the first five articles, we covered the main production areas of coin scale boxes in Spain (Valencia, Barcelona, Andalusia and Madrid) plus the boxes we assume to be imported from Nürnberg mainly during the 19th century.

So what may be remaining?

We own boxes which are still not described and which are of different origins:

Boxes made in France for the Spanish market

Boxes made in UK for the Spanish market

Boxes made in Spain in the second half of the 19th century

Boxes where the origin is not yet 100 % clear.

We will describe the different types in some shorter articles case by case and begin with a box which was purchased some years ago at an auction in Barcelona.



Figure 1. ▲▲ Wooden coinscale box LxBxH: 165, 72, 26 mm.

The box bears an inscription on the top, which has not been identified so far. If this is an inscription by an owner or the description of the maker remains uncertain.

The box shows none of the features which are typical for any of the production areas described so far and is clearly different especially from those known for Barcelona. A look into the interior of the box shows that it is made entirely from wood.



Figure 2. ^^ Balance, four coin weights and two remaining fractional weights.

The box has holders for just four coin weights, its place for the balance and comparably much space for fractional weights which arrived in a (not shown) piece of thin paper, which may even be as old as the box.

The weights all showing yoke and arrows (the symbols of Isabella and Ferdinand the catholic monarchs) have the following typical masses:

- 8 dots: 27,05 g (strange animal)
- 4 dots: 13,53 g (adjusted with lead)
- 2 circles: 6,75 g (V D VIII, shield of Catalonia)
- Smallest: 3,39 g (II; XVII, strange animal)

And the fractionals:

- 16 dots: 1,70 g (32)
- 4 dots: 0,23 g (diamond mark)

The closure has in the inner part two kinds of inscriptions. On the right side, a cross with the mass of the larger coin weights in metric grams. This inscription was surely added later, after the metrification of Spain or possibly during the short French occupation under Napoleon. In the center, one can find 8 re and something looking like a pipe, which confused us for some time, but is simply standing for 8 Reales (the typical largest silver coin at those times).



Figure 3. ▲▲ Coin weights and fractionals.



Figure 4. ▲▲ Reverse of coin weights and fractionals.

The use of the symbol “yoke and arrows” tells us that the coin weights were specifically meant to weigh the typical gold coins of the time, 8 down to one escudo. The fact that only four such coin weights were foreseen gives a strong indication that the box is from before the money reform of 1731, after which a fifth weight was needed and legally prescribed.

The two larger coin weights show small dots as indication of their value, an unusual feature for those found in Spanish boxes. The coin weight with two circles has on both sides the crowned shield of Catalonia.

Which further indications may help us? The coin weight for two escudos shows on the reverse the symbol of lily over D, a clear indication to Lyon. The other coin weights do not seem to have this, but the box is surely not from Lyon. The two smallest coin weights have inscriptions expressed in deniers and grain, e.g. five deniers and 8 grain are 6,80 g. So the two smallest coin weights are most probably of French origin, while the two larger ones may not be and could be from Catalonia.

That all four weights somehow belong together can be shown by the fact that the largest as well as the smallest piece bear the unidentified mark shown in figure 5.

We had some discussions with French colleagues and after those we did not have any clear indication that this box may be from any of the known French production areas.

What neither the balance, which has no marks, nor the coin weights show, is any of the marks prescribed by the Castilian kings after the War of the Spanish Succession, which shows the arms of Castilia above the arms of Catalonia.

The most logical conclusion would be that this is a very early Catalanian box, most probably from before the time of the fall and destruction of Barcelona as consequence of the war in the year 1714, when all historical Catalanian institutions were forbidden. Whether this is a box of the very early 18th century or even of the 17th is speculation.



Figure 5. ▲▲ We have no idea what this mark shows.

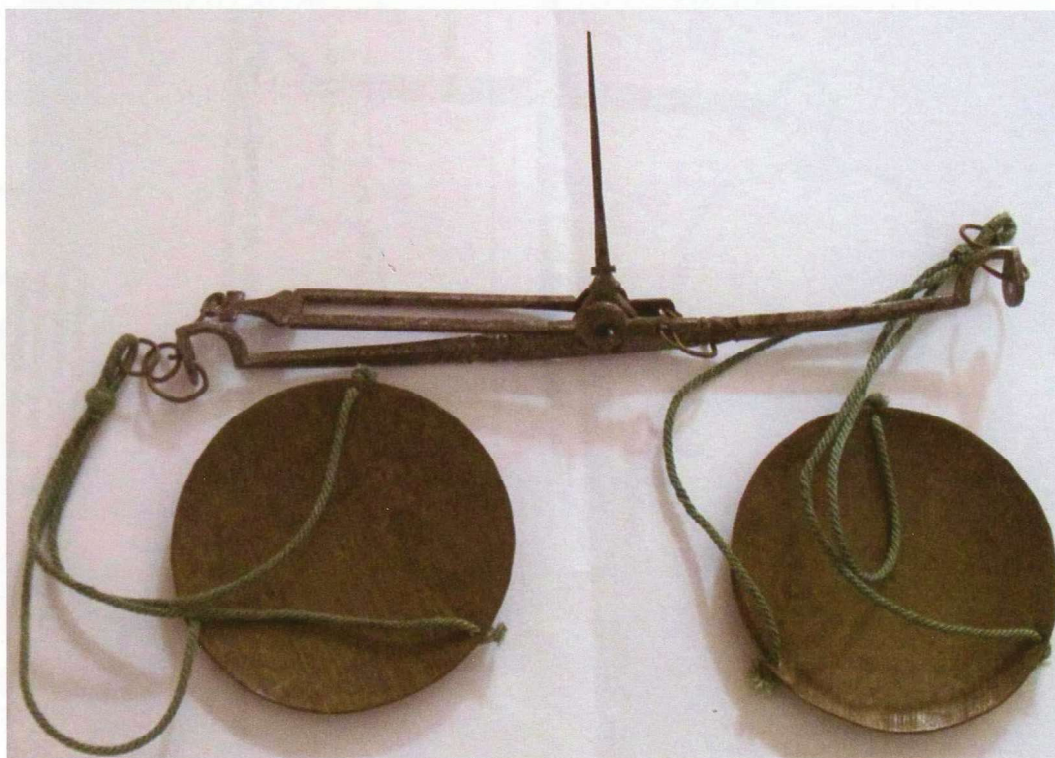
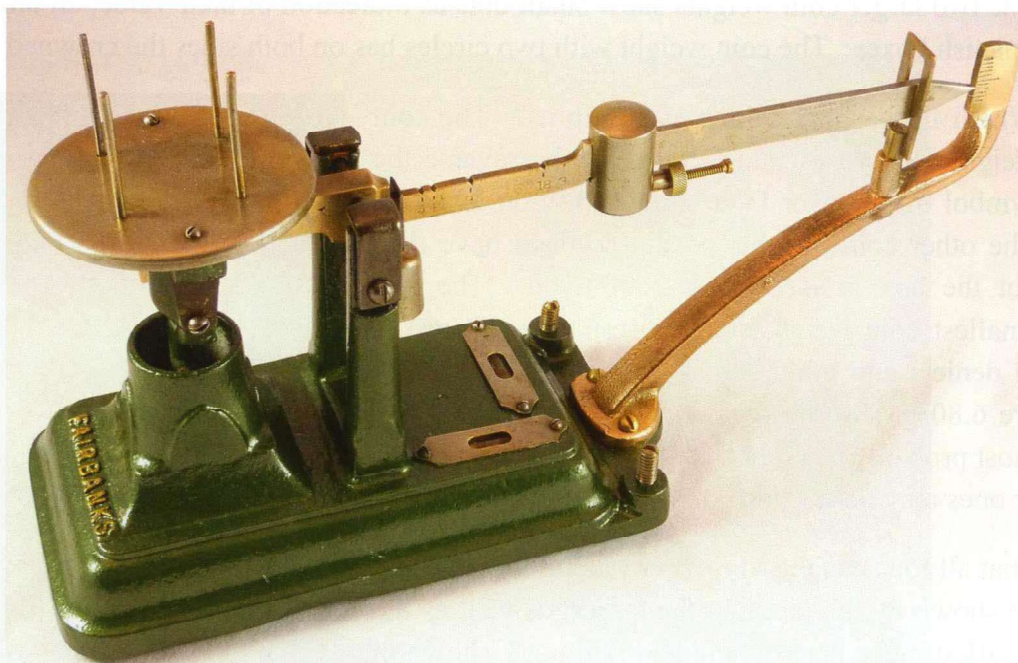


Figure 6. ▲▲ The typical type of coin scale as found in Catalonia and Valencia.

Showcase

This Fairbanks cream or butter testing scale is used to measure the percentage of water or moisture in cream or butterfat. This design is different than is usually found in that the steelyard beam acts as the pointer or indicator. The cast iron base used here is similar to those Fairbanks used in their 9 ounce postal scales, with modifications. Dating from the early 20th century, the beam carries two poises and its base houses two spirit levels.

Mary Anne Murphy Collection.



This postal scale is marked Ali-garh Postal Workshop on both plates. The hardwood base measures 11" high by 5" deep by 10 3/4" wide and has a 7 1/4" long steel beam. The brass weights are marked 8, 4, 2, 1, 1/2, and 1/4 ounce.

Carol & Bob Hayden Collection.

The Patterson Egg Candler and Grading Scale

BY JAN BERNING

While attending the 2009 scale collector's convention in Kansas City, Missouri, we joined many other members on a visit to see Les Schneiderman's collection in Omaha, Nebraska. As one collector was looking through the egg scales there, he noticed a strange one that he had never seen before (Figure 1). He asked me to identify it for him and when I could not, he asked me to take a photograph of it and e-mail it to him later that week. After arriving home a few days later, I e-mailed the photo to the other collector as well as Charley Amsbaugh, our ISASC egg scale aficionado, to see if he could identify the scale. When Charley couldn't identify the scale, I knew this was a mystery that might never be solved.

In December of the same year, while visiting my sister in Tucson, Arizona, we visited with ISASC member Barbara Grygutis and her husband, Larry, in order to photograph Barbara's egg scale collection. While there, we discovered an egg candler and scale with the label affixed to it that is shown in Figure 2. In the mean time, Charley Amsbaugh found a Patterson, complete with its metal box and label, on ebay. We also learned from Charley that John Weber had a Patterson. After meeting Weber in the summer of 2016, we requested photos of his scale. It was not until much later that we concluded that the Schneiderman and Amsbaugh scales were mechanically similar and that the Grygutis and Weber scales were mechanically similar.



Figure 1. ▲▲ Schneiderman's unidentified egg scale.



Figure 2. ◀◀ The labels on the Grygutis and Amsbaugh Patterson Egg Candler and Grading Scales.

We have now been able to identify and examine four different Patterson Egg Candler and Grading Scales. Patterson egg scales are mounted inside a box constructed of galvanized steel, have a paper chart, an egg scale constructed primarily of aluminum with poise lifting fins similar to, but thicker than, the Acme egg scales and a porcelain light fixture affixed to the inside back of the box for candling.

The Patterson that Barbara Grygutis has (Figure 3) is equipped with two candlers on the front towards the top and a single egg scale at the lower front center. The Weber Patterson is equipped with a single candler at top and a single egg scale at the lower front center. It alone is equipped with a scissor bracket so that it may be hung on a wall. The Schneiderman scale, while missing its box, is identical to the Amsbaugh scale. Both of these examples have a top center egg cup that protrudes above the box top. The candler on the complete Amsbaugh Patterson is at the front center near the bottom of the box.



Figure 3. ▲▲ Barbara Grygutis' Patterson has two candlers and a single egg scale at the center near the bottom of the front of the scale box. Note the switch for the candler bulb on the top right of the scale box. The lid of the box on this scale is removable.



Figure 4. << The Weber Patterson is similar to the one in Figure 3, except it has a smaller box and has only a single candler.



Figure 5. ▲▲ Weber's Patterson is equipped with a scissor bracket so that it may be mounted on the wall. The scales were all equipped with a paper chart graduated from 18 to 30 ounces per dozen. The Amsbaugh, Grygutis and Weber Pattersons have vents on each side of the box to allow the heat generated by the candler(s) to escape.



Figure 6. << The Schneiderman scale which started this quest, is missing its box, but it is identical to the Amsbaugh scale shown below in figure 7.

Figure 7. >> The Amsbaugh Patterson shown at right is identical mechanically to the Schneiderman scale shown above in figures 1 and 5, but is complete with a box and label identifying it definitively as a Patterson. Both of these examples have a top loading egg cup with a paper weight chart, which indicates the weight as the fin poises are raised. The candler is on the front near the bottom of the scale's box.



Figure 8. >> The chart on the Patterson scales are graduated from 18 to 30 as shown above. The charts are made from paper and are mounted to the front of the scales with screws. As the egg cup is depressed, the chart moves down to indicate the weight per dozen eggs.



The labels on the Grygutis and Amsbaugh Pattersons are identical, reading as follows:

Patterson

EGG CANDLER AND GRADING SCALE

1. Scale indicates ounces per dozen. For Example: Suppose an egg placed in cup shows 24 at indicator. This means that one dozen such eggs will weight 24 ounces.
2. Candling and Grading regulations differ according to State Requirements. Know your State Regulations.
3. Use no oil on scale. Mount in level position.

PATTERSON MANUFACTURING COMPANY
CLINTONVILLE, WISCONSIN

Our next step was to research the Patterson Manufacturing Company and the owner if possible.

After a call to the Historical Society in Clintonville, we decided the best research could be done in person. We met Richard K. Beggs, President of the Clintonville Area Historical Society at the Clintonville Public Library. Beggs was familiar with the Patterson Manufacturing Company, but had no knowledge of the company having manufactured an egg scale. What we did learn from Mr. Beggs was that Patterson Manufacturing Company was founded in 1925 and that Thomas A. Patterson was awarded patent number 1,553,957 on 15 September 1925, for a speedometer that connected to the planetary transmission of a Model T Ford. *These units were sold between 1926 and 1928 through Ford Motor Company of Canada, especially in their export territories-Australia, New Zealand and portions of Africa-as well as in the Dominion of Canada.*¹ This speedometer was quite popular, but was short lived due to the demise of the Model T in 1927.



Figure 7. ▲▲ In 1926, Patterson Manufacturing Company moved to this building on the corner of Third and Main Streets in Clintonville. At that time the company employed 20 workers.

By 1926, the company with 20 employees had moved to a location on the corner of Third and Main Streets in Clintonville, and introduced a new Patterson brake testing machine in July of 1928. This machine, as well as the Patterson Company, were hard hit by the depression in 1931, but Thomas Patterson developed and built a cheese agitator in 1935. *The company was reorganized in 1940 with Arthur Dies and Raymond Hull buying stock in the firm; and in 1948, after the death of Patterson, these men purchased the entire stock.*² The Cheese agitator was still being produced as late as 1955, but the company remained as a machine shop well into the 1960s.

The histories of Thomas A. Patterson, Patterson Manufacturing and Clintonville, Wisconsin, make no mention of the egg scale. The President of the Clintonville Area Historical Society did not know of its existence and only four are known to be in collections. Many questions remain as to the exact dates of the Patterson Egg Scale.

Notes & References:

1. Collins, Tom, *The Legendary Model T Ford*, 2007 Krause Publications.
2. Clintonville Harvest Festival, Inc., *A Civic Century 1855-1955*, 1955.

The author appreciates the help of Charley Amsbaugh, Barbara Grygutis, John Weber and the late Les Schneiderman for their photos used in this article.

Granddad's Gold Scale

BY TONY McCARTHY

Sometimes it isn't the biggest, the best, or the rarest scale that means the most.

My name is Tony McCarthy and I live in Dunedin, New Zealand. (Figure 1) When I look back, there is no wonder that I am attached to my Granddad's gold scales and have an interest in collecting Troy weights. *It's in my Blood* and a side line that I am very proud of – for a variety of reasons. Scales have played a huge part in my life, however not exactly in the way you might expect.

In my childhood home was a set of boxed Avery Gold Scales (1891-1896) that belonged to my maternal grandfather, Charles Weaver (Figure 2). Charles was a renowned Dredge Master and Shareholder of the Earnsclough Gold Dredges based in Alexandra, New Zealand, during the gold rush from early 1880s through to 1924.

His father John Weaver, was an old digger from the California and Victoria gold rushes. He left England about 1848 and arrived in Australia. John then travelled to the California Gold Rush with little success, then travelled back to Australia in 1855, joining in with the Victoria Gold Rush. He married in Australia and moved his family onto the Dunstan gold fields in Otago, New Zealand, in 1864.



Figure 1. ▲▲ Map of New Zealand.



Figure 2. ▲▲ Gold scales that belonged to Charles Weaver, the author's Grandfather.

My McCarthy great Grandparents (paternal side) arrived in New Zealand in 1859. In 1890, Granddad and his brother bought their first mining claim and worked together for many years. Granddad McCarthy also worked on the Earnsclough No. 1 dredge and at times as a road maker. In 1907, he joined his brother-in-law, Henry Downie, who was recruited by Captain Henry Miles to work the first tin dredge ever in South East Asia at Phuket Harbour, Siam, now called Thailand.

In the 1900s, Alexandra was at the centre of the gold dredging boom. Interestingly, both of my Grandfathers were born in 1869 and both worked on dredges. Dad and my Uncle Owen, continued the family tradition working on the last gold dredge in the Alexandra area that was finally dismantled in 1963.

Growing up around these 'monster' dredges was an experience few could enjoy. I clearly remember the day, as a 5 year old, when my older brother showed me around the dredge when it was semi closed for maintenance. What an adventure! We went up and

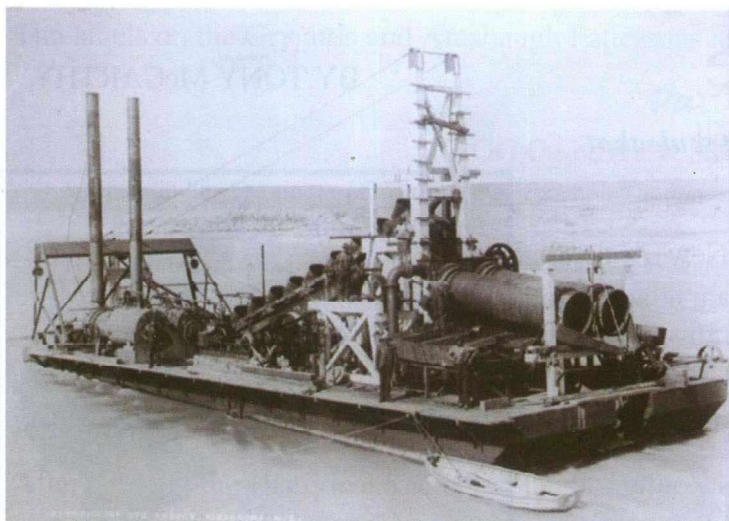


Figure 3. ▲▲ Earnsclough No 2 Gold Dredge in Alexandra, Central Otago, New Zealand 1899-1916. When launched, this was the largest dredge in New Zealand.

back onto a gold dredge, somewhere in the world, but until then I will continue collecting and learning about the scales that weighed the result of our Grandparents' hard day's work.

Figure 4. ➤ ➤ Earnsclough No 3 Gold Dredge in Alexandra, New Zealand, 1903-1923. One of the first electric powered dredges in the country. Powered by its own power scheme.

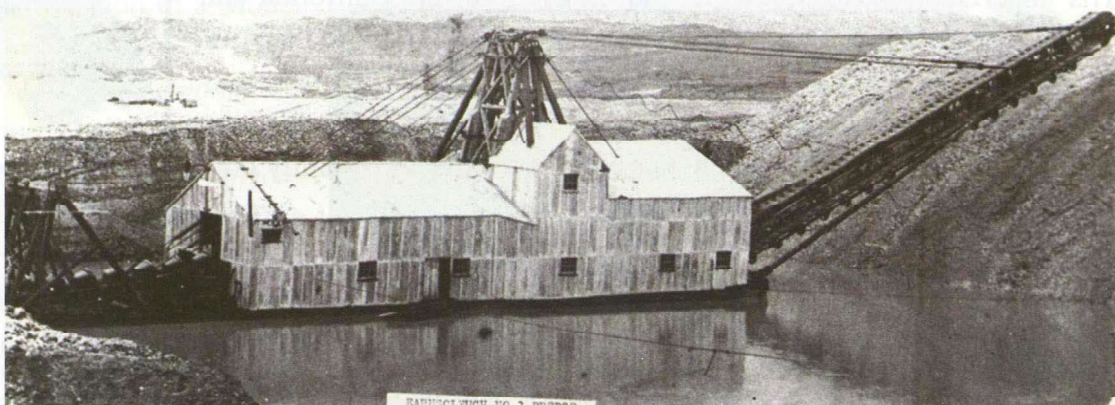


Figure 5. ▲▲ A set of small hand-held gold scales bought by the author at age 15.

down ladders, past moving screen plates and elevators going to places that I am sure we were not supposed to. I was so excited yet so scared. The noise of us running around echoed and everything appeared so big. (Work safe NZ would have had a 'field day' with safety practices, procedure and policies.) Being that bit older my brother was far more adventurous which may have led him to falling off the dredge and into the pond. With gumboots being our foot wear of choice and although Quentin could swim, he went down fast (he thought he was a goner) and as he struggled to surface, Dad's arm came down and dragged him out. I imagine they both had some explaining to do when they got home. Not the best place for children, but I guess we were really lucky and that was life back then.

It was certainly fun. As an adult, I would love to go

As in most families, it was the custom for the oldest brother to inherit the important family heirlooms. So Granddad's scales were passed on and for some strange reason I decided to also give my brother my first set of small hand held gold scales that I bought in 1972, age 15. Maybe I always thought that in some strange way they might find their way back to me. Although he kept and appreciated them because of their history, he did not have mining in his blood and consequently never felt an attachment to them. After many years my brother decided that I would be a better caretaker of these family scales, so I did not need a second invite and brought him a similar set (at my cost) to replace the original set. So - I am now the very proud caretaker of them and in a few years they will move back with my wife and me, to our home town Alexandra in Central Otago, NZ, where I believe they belong.

Figure 6. >> Alexandra Gold Dredge, 1936- 1963, the last dredge to operate in Otago.

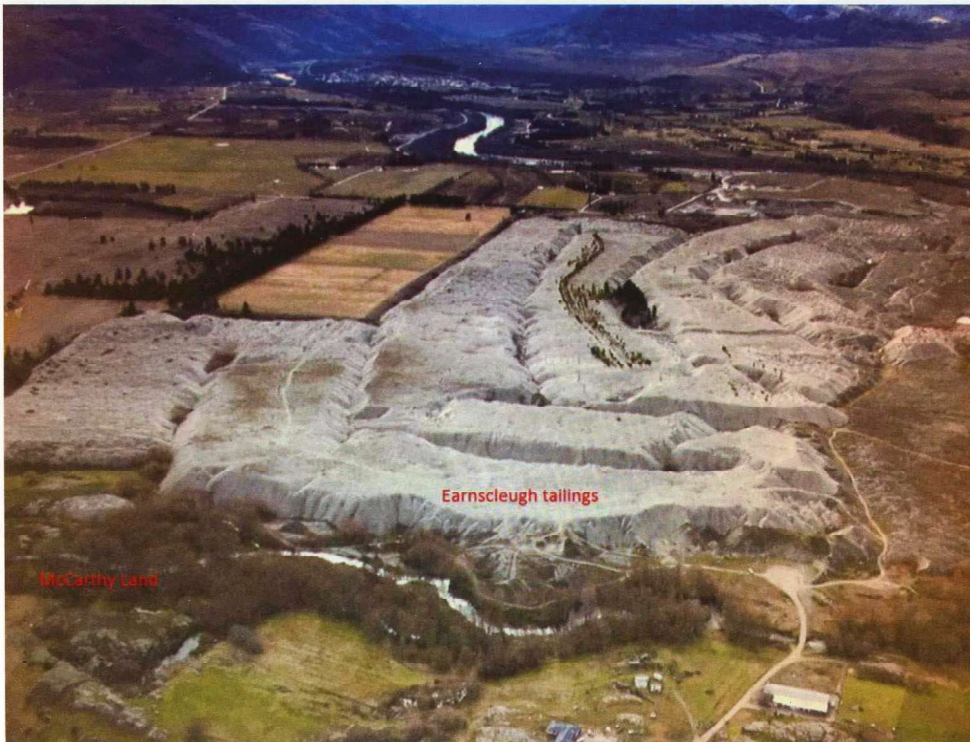


Figure 7. << The Earnscleugh tailings. The result from gold dredging, good productive land has been turned up-side down and now all we can see is gravel and rocks. The tailings have now been declared a historic reserve. At the top of the picture is the small town of Clyde and Alexandra is across the river on the right hand side.

My second set of scales were a cheap reproduction set that I bought for a friend who was in hospital suffering with anorexia. Visitors were not permitted until she reached a specific weight. On one visit, I gave her the scales and said that they represented her health and the balance she needed to attain in order to get well. It seemed simple to me and critical that she understood that every little bit helped. I added a tiny piece of paper to one side to show her how easily the scales could be tipped (we laughed that I didn't have any gold to demonstrate with). She loved them and we often spoke about them once she got out. Sadly, after a tough battle, the scales tipped too far in one direction and she lost her life at age 20. Scales can be big, small, intricate, historic, one-off or mass produced. To me, scales also represent the need for balance in one's life.

ISASC in New Zealand

Prior to myself joining, I was told that there was only ever one other member of ISASC USA in New Zealand, my very good friend, Bruce Cook. When Bruce passed away, his collection went to auction and I was lucky enough to buy some of his gold scales and Troy weights. However, the real treasure that I bought was all of his ISASC magazines and that helped shape my decision to become an ISASC member.



Figure 8. ▲▲ Government of New Zealand scales.

I made contact with Shirley Schmidt, who has been fantastic and so helpful to a new member. With her help and advice from Carol Hayden and Winsome Leadbetter, I continued to replace the few magazines that were missing from Bruce's collection. Big thanks must also go to Mike Sharpe in the UK, who is always so helpful. Information is everything!

I also have been most fortunate in corresponding with some fantastic members. I feel especially privileged to be very good friends with Bob Jibben, who I hold in the highest regard, and who has taught and shown me a lot. (Not just about scales.) We are in regular contact and I always look forward to his next email. I have also enjoyed talking to Clem Monday and I owe a big thanks to both Jan & Bill Berning, and Jaap Visser, who have been so very helpful. I always appreciate it and I am so grateful.

My primary interest is in gold and bullion scales and Troy weights. I also have an interest in coin scales and weights and my brother Quentin is a coin collector. In New Zealand, gold and bullion scales are mostly Avery or De Grave

and, with a population of only 4 million people, it is even difficult to get a decent size set of boxed scales, which are far more expensive than in the USA. When I first joined ISASC, I made the 'rookie mistake' of mentioning to some members that I would like to buy a large set of bullion scales and was stunned with a couple of offers, one being the largest set of scales I have ever seen in my life. I didn't know they made them quite so big and had the Titanic not met her fate, she could well have been big enough to transport them the 7,152 miles to New Zealand. I have learnt since to be careful with what I ask for.



Figure 9. ▲▲ Government of New Zealand scales.

My second most prized set of scales is a set made for the Government of New Zealand. This is a larger set of balance scales made by DeGrave, Short Fanner & Co with 'Government of New Zealand' written on them. They came in the original trunk that still has the manufactures label on top. My understanding is that this set was used to measure the Bank's Troy weights. Not 100% sure! Maybe someone can tell me?

Figure 10. ➤➤ Small display of scales and weights in a local bank.



Figure 11. ⚡⚡ Set of Oertling bullion scales.

I have a collection of Troy weights that I'm always keen to add to. When I started collecting, I bought a few separate cup weights with the aim of completing a set as I thought the cups were all interchangeable! How naive was that! I didn't know that it is almost impossible to make a set out of individual cup weights. What I know now is that in an original complete set of Troy cup weights, they will fit nicely and be level when altogether (not loose) when all the numbers are lined up, all the lettering of Troy and Oz. will be in their own line and be in the same font. I guess we all have to learn!

Figure 12. ➤➤ A set of troy weights, the largest of which is 128 oz.





With my collection of Troy cup weights, I have been trying to collect any set that has a different size outer cup. E.g., the largest cup in a set (which has rings around the outside of the cup) I have sets from 64 Troy oz -50-48 -32-24-20-16-12-10-8-6-5-4-3-2-1-1/2 Troy oz. I am looking for any sets or other cup weights that fall above or in between these numbers.

Figure 13. ^^ These two sets have the largest weight being 4 Troy oz, but you will see how different each set is in their layout. This is why it is so hard to make up a complete proper fitting set with all numbers and text lining up.

I would really enjoy making contact with any other collector of gold scales or troy weights or anyone that can give me more knowledge on these items. I am very interested in buying a wooden foldable tripod stand for the Government of New Zealand, scales and any TROY test or bell weights. I am intending to write a booklet on Troy Cup, Bell and Cylindrical weights, any help would be appreciated.



Figure 14. ^^ Largest nested weights 1 oz. and 1/2 oz. troy

Other Interests:

Indian Motorcycles

Collecting Phonographs and records

Collecting early electric invalids chairs (POV) now called "mobility scooters."

Although I have now been a member since 2012 I would like to say a big Thank you for welcoming me from far across the seas into ISASC and teaching me more than I thought I would ever know. I hope you enjoy my short story and the pictures below.

Tony McCarthy
211 King Edward Street
Dunedin 9012
New Zealand
Phone 0064-34552875
Email address mobilityscooters@xtra.co.nz



Figure 15. ^^ Chinese scales used during the gold rush in New Zealand.



Figure 16. << Troy Bell weights with one 500 Troy oz cylindrical weight.

Figure 17. >> Two banker's gold scales in the author's collection.



Figure 19. >> Nested weights in author's collection.

Figure 18. << Sets of bullion scales in the author's collection.



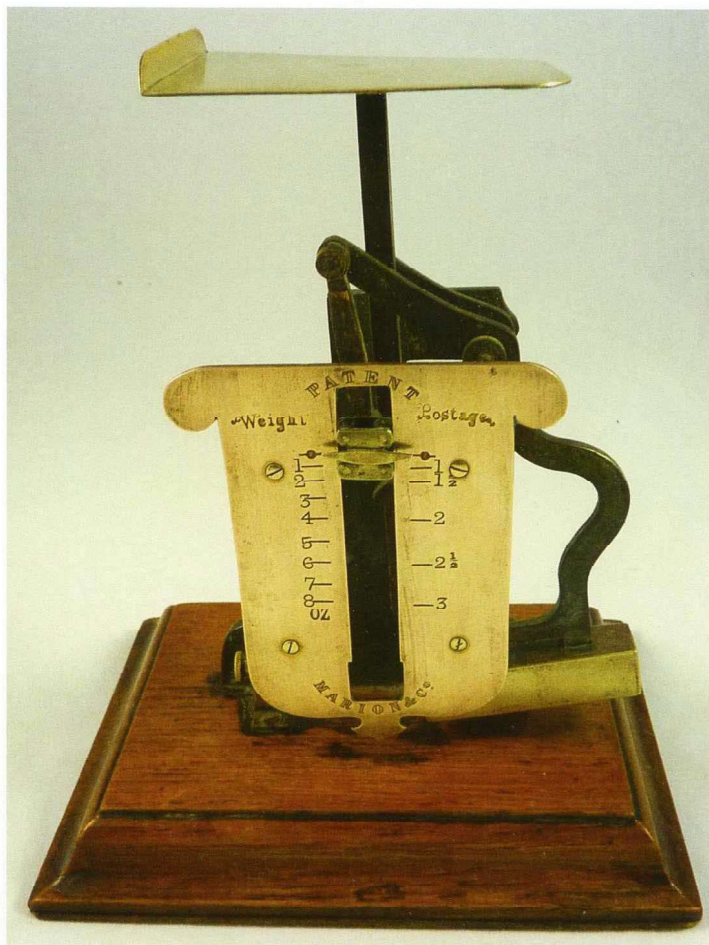
Showcase

➤➤ Marion and Co. made this pendulum postal scale of brass which is affixed to a hardwood base. It measures only 6.5" tall, which is much smaller than most Marion scales. It is graduated from 1 to 8 ounces by ounce and from 1 to 3 pence.

Judy & Eric Soslau Collec-

▼▼ This hand held pendulum postal scale is gilded and finely engraved with a steel indicator hand. It weighs $\frac{1}{4}$ oz. to 4 oz. and shows 1865 to 1870 British postage rates. The back is signed Parnell, London, who were the makers. The design was patented by N.R. Hall in 1863. The scale is contained in a brown leather case with initials CY on the outside of lid, marked C. Asprey 166 Bond St., who were the retailers, near the hinges and has a dark blue velvet lining. It measures $4\frac{1}{8}$ inches long and has a dial diameter of $2\frac{1}{4}$ inches.

Steve and Kathy Barnett Collection





EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

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Cover Picture

Cast into the plate of this brass rolling pin scale is MANUFACTURED BY JOS^H. & EDM^M. RATCLIFF, S^T. PAUL'S SQUARE, BIRM^M. R. WILLIS PATENTEE. Its hardwood base measures 10 inches long by 4¹/₈ inches wide and the scale measures 5 ³/₈ inches tall. The scale on the right is graduated in Pence from 12 at the bottom to 20 at the top. It is complete with six original rolling pin shaped counter poises.

Provenance: Bob Stein Collection.

Collection of Bob & Carol Hayden.

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Pre-Metric Danish Weights - Their Values and Verification

BY KATHY & STEVE BARNETT

When we purchased a partial set of square, trapezoidal brass weights in a birch wood block (Figure 1), the only information that we had from the seller was that they were Danish and dated from 1889, eighteen years before Denmark adopted the metric system in 1907. They are stamped with various marks (Figure 2 and 3), which, at the time, we did not know how to interpret. We knew nothing about the pre-metric Danish weight units as represented by the numerical values stamped on the weights. We didn't know the values of the missing weights. We thought that the mark on the top (integrated C and 5) was probably for the monarch who reigned at the time the weights were verified. We assumed that Denmark used the same system as England and other European countries of using the initials, or insignia, of the monarch who reigned when the weights were verified. We conjectured that the other marks represented the location in which the weights were verified, again using a system similar to the weights and measures office designator, or city mark, used in England and other countries.



Figure 1. ▲▲ Partial set of pre-metric Danish weights.

Figure 2. >>
Three of the
weights with their
verification marks.





Figure 3. << The two smaller weights with their verification marks.

Figure 4. >> Weight showing the date of 1789 a bit more clearly.



We did not find any information in previous editions of EQM. The first step in our research was to find a list of Danish monarchs for the last two hundred years, and the years of their reign. Using Wikipedia, we discovered that with only a couple of exceptions, Danish kings since the middle of the 15th Century are named either Christian or Frederick. In 1889, King Christian IX was on the throne. So what we believed was the royal insignia on the weights was not correct if the weights were verified in 1889. Closer examination of the 1/2P weight showed a faint image of “17” before the much clearer “89” in what we believed represented the year in which it was verified. (Figure 4) However, the reigning monarch in 1789 was Christian VII. So, we were still puzzled by the royal insignia on the weights. It did not match that of the reigning monarchs in either 1789 or 1889.

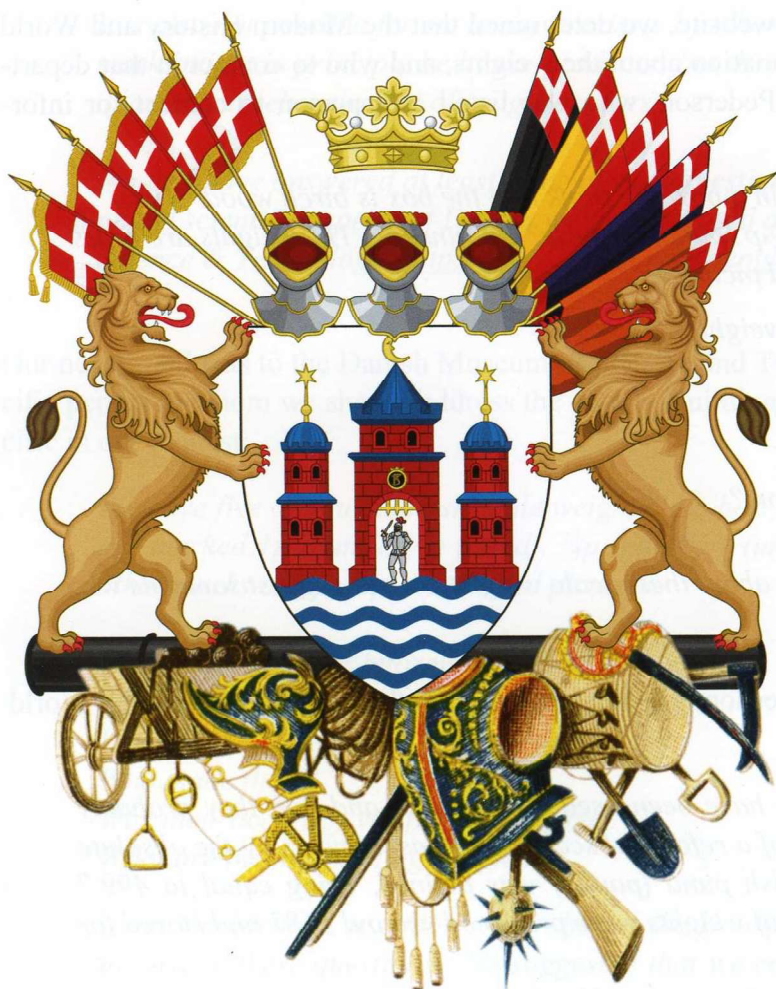


Figure 5. << Greater Coat of Arms of Copenhagen.

Regarding the other stamps on the weights, we conjectured that the weights in the set were 1 pound, $\frac{1}{2}$ pound, $\frac{1}{4}$ pound, and 4 and 2 units of a smaller weight unit. Bruno Kisch lists weight units for Copenhagen as: 1 pound commercial weight = 500 gm = 16 onces = 32 loth = 128 quentchen (quintin) = 512 ort = 8,192 es. At this point, we did not know if the two smaller weights were onces or loth. The castle stamped on the weights is from the coat of arms of Copenhagen (Figures 5 and 6) and the "K" is from the Danish spelling of Copenhagen (København).



Figure 6. >> Central part of Copenhagen Coat of Arms.

This is as far as we got from the web and our reference books. Where else might we get our questions answered? Perhaps there is a museum in Denmark that could provide information. We found the web site for the National Museum of Denmark and sent an email with information and pictures to them and a request for any information they might have. We weren't sure if we would get an answer, and if language would be a problem. We received an informative reply within a couple of days. Their reply also suggested that we contact the Danish Museum of Science and Technology, which we did. Their quick response provided even more information. Fortunately, the replies were in good English. As we recalled, from visiting Denmark many years ago, English is taught in the schools as a second language.

By searching the National Museum of Denmark's website, we determined that the Modern History and World Cultures Department would most likely have information about the weights, and who to contact in that department. We sent the following email to Christian Pederson, who was listed as a person to contact for information:

We have five antique Danish scale weights in a box. We think that the box is birch wood. The weights are marked 1p (pund), $\frac{1}{2}$ p (pund), $\frac{1}{4}$ p (pund), 4 (unse?), 2 (unse?). The weights are brass and have other marks on the top. I attached pictures.

We would like more information about the weights:

When were they made?

Where were they made?

Who made them?

Was their accuracy verified? By whom?

What are the five missing weights?

We hope that you can answer our questions about these scale weights or can suggest someone who can.

The following day, we got a reply from Lars Christenson, a senior researcher in the Modern History and World Cultures Department at the museum:

I can confirm that the weights in question have been used in Denmark and that they probably have been manufactured here. As a result of a reform of scale and measurements by the absolute monarchy in the late 17th century, a Danish pund (pound) was defined, being equal to 499,7 grams in modern, metric weight. Two sets of weights were produced around 1687 and stored for reference.

The idea was, that weights for practical use could be produced from these reference weights, and your set seems to be such a copy, since the actual weights are similar in size and form, but the box somewhat more crude and simple.

Two marks can be identified on the photos of your weights. One is the letter C intertwined with the number 5 and a crown on top. This is the monogram of Christian 5, the reigning king at the time of the weight reform. This mark, which signifies accordance with the above mentioned reform, was however used at least until somewhere in the mid-19th century, when a pund was adjusted to 500 grams and gradually incorporated into the metric system, and in some instances even later.

But sometimes, along this development the usual type of weights used shifted from the square type to a more recent circular or truncated cone shaped type. Based on this, my best guess would be that your set of weights are from the 18th or very early 19th century.

Another mark is a castle with three pointed towers, which is the symbol of the magistrate of Copenhagen, which was the main authority for controlling and approving the accuracy of weights. Unfortunately, I have not been able to locate information about precisely which weights were included in such a set. But the overall system of division was as follows: 1 pund = 16 unser = 32 lod = 128 kvint. This would mean that, if the mark 4 means 4 unser (ounces), this weight would be the same as the one marked 1/4P, which does not seem to be the case. But I am afraid I have no better explanation to offer.

It is also not possible for me to say precisely by whom your set was produced. Some of the other marks might in principle be by the producer, but they are very hard to read, and I am not aware of any comprehensive list of weight-makers.

I hope I have answered at least some of your questions. If you want more information, especially on the scientific aspects of Danish weights, I would advise you to contact the Danish Museum of Science & Technology (<http://tekniskmuseum.dk/english/>).

Our next email was to the Danish Museum of Science and Technology. Again, their website suggested a specific person to whom we should address the email. Building on what we learned so far, we could be more specific in our request:

We have five antique Danish scale weights in a box. We think that the box is birch wood. The weights are marked 1p (pund), $\frac{1}{2}$ p (pund), $\frac{1}{4}$ p (pund), 4 (unse?), 2 (unse?). The weights are brass and have other marks on the top. I attached pictures.

We would like more information about the weights.

When were they made?

Where were they made?

Who made them?

Was their accuracy verified? By whom?

What are the five missing weights?

Lars Christensen, a senior researcher at the Danish National Museum, provided a lot of information to answer these questions. He suggested that we contact you for more information, especially on the scientific aspects of Danish weight. He confirmed that weights are Danish, made in the 18th or early 19th century. The mark with the "C" and intertwined 5 with the crown on top is Christen 5's monograph and means that these weights were verified against the reference weights made in 1687 when Christen V created the weights and measures standards (1pund=499.7 grams). The castle with the three spires means they were approved as correct by the magistrate of Copenhagen. He did not know what the "K" mark means, or the "_89" in circle means. For one of the weights, it looks like it could be 1789. Could that be the year in which the weights were made and approved? Do you have any information about the "K" mark?

He explained the weight unit system (1 pund = 16 unse = 32 lod = 128 kvint). From this information we determined that the weight marked with a 4 is four lod or two unse; and the one marked 2 is two lod or one unse. The five missing weights were probably 4 kvint = 1 lod; 2 kvint = $\frac{1}{2}$ lod, 1 kvint = $\frac{1}{4}$ lod, $\frac{1}{2}$ kvint and $\frac{1}{4}$ kvint. We think that they used these different units to avoid having fractions less than $\frac{1}{4}$. Since the kvint is about 4 grams, the two smallest weights were about 2 grams and 1 gram. This combination of weights would have allowed the user to weigh items from almost two punds (about 1 kilo) to $\frac{1}{4}$ kvint (about 1 gram). Do you think that this is correct?

Do you have any additional information about these weights?

Do you have information about the scales that were used to check the weights against the standard weights?

Thank you for helping us to learn more about these weights.

The following day we received a reply from Niels Christiansen, Registrar and librarian at the museum:

I'm certainly not an expert on this subject and I also see that Lars has already answered most of your questions.

Fortunately, our library contains literature dealing with weight and measure and among this I found a description of weights similar to yours.

The K mark means København (Copenhagen) for the location of calibration. The ..89 is the year 1789. As your box is meant for 10 weights it is most likely that these were, besides the existing: 1 lod, ½ lod, ¼ lod and 2 X 1/8 lod.

Very little is known about the scales used for comparison of the weights at this time.

In a report made by members of the Copenhagen Magistrate describing the calibration, they mention "a large iron balance with 2 hanging weight bowls being the most precise and best in the Calibration Chamber" (my poor translation of old officially written Danish).

I hope this answers at least some of your questions and I was once again reminded of the complexity of this subject.



Figure 7. ♠♠ Christian V of Denmark, 9 February 1670 - 25 August 1699. <http://www.kongernessamling.dk/en/rosenborg/person/>



Figure 8. ♠♠ Commemorative postal stamp for the 300th anniversary of the creation of the Danish Weights and Measures Office.

Christian V's (Figure 7) creation of the weights and measures office was a significant event in Danish History. Cliff Lushbough, in his Show and Tell presentation about scale ephemera at the 2017 ISASC Convention, included a Danish postal stamp from 1983 commemorating the 300th anniversary of the weights and measures office. He sent a copy to me to use in the article. (Figure 8)

Finally, we noted that the wooden holder for the weights looked a bit dried out and its color faded. A friend, who carves wooden bowls, utensils and trays, uses a mixture of bee's wax and mineral oil to preserve and enhance the color of his products. We've found that this mixture does wonders to enhance and protect antique wood objects. We applied it to the weight block. (Figures 9 and 10)

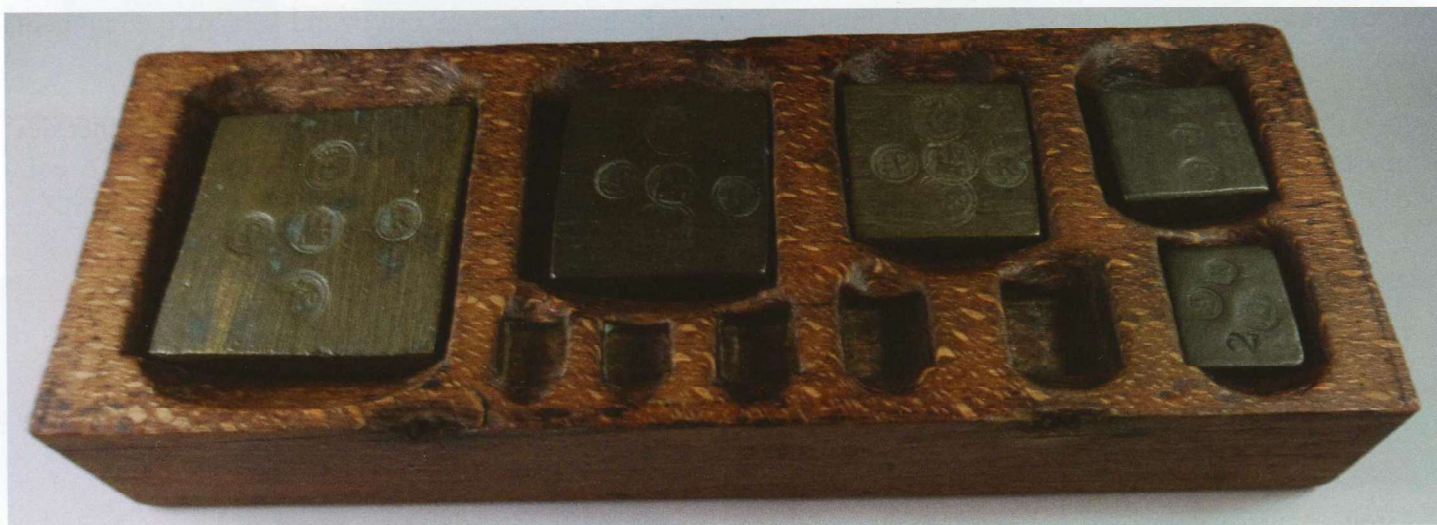


Figure 9. ▲▲ Weight block with weights following rejuvenation.

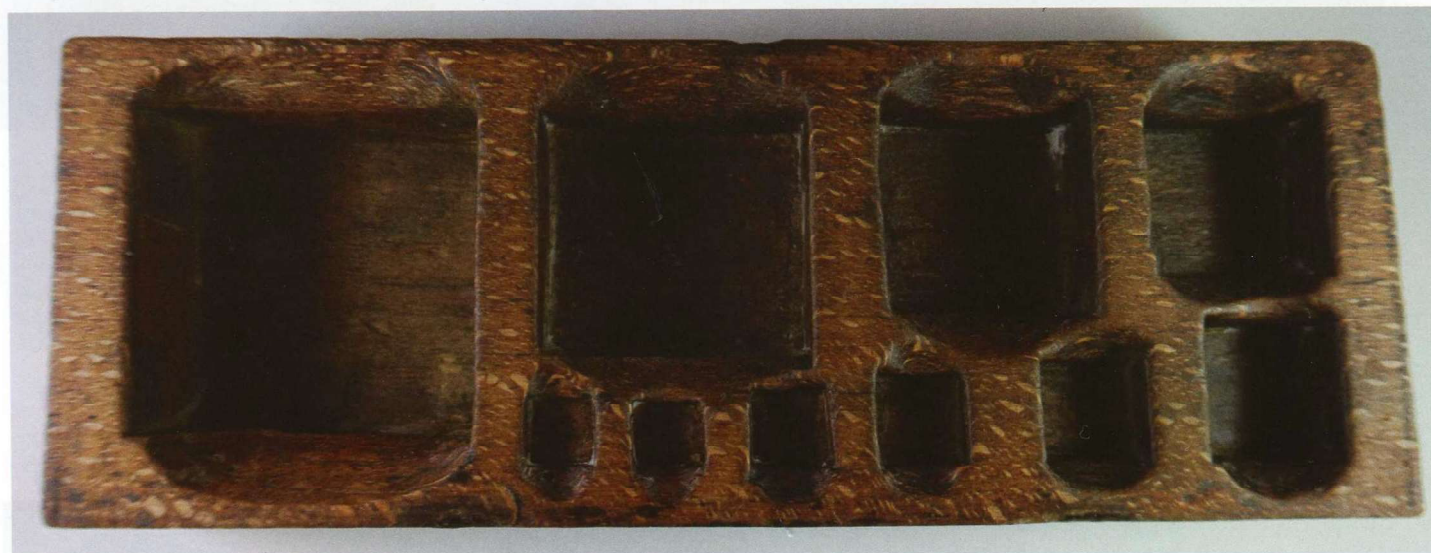


Figure 10. ▲▲ Weight block without weights following rejuvenation.

Thanks to the information provided by Lars Christenson and Niels Christiansen, at the two museums, we have a lot more information about the weights and the official verification marks used in the late 17th, 18th and early 19th centuries. In recognition of Christian V's work to establish weight and measure standards, any weight that was officially verified in Denmark during this time period bore his insignia, not that of the monarch in power. There was a standard set of weights used to verify newly made weights, apparently on an iron beam scale with hanging pans. We know the weight units that were used, the relation between the units, and the size of the missing weights in this set. Finally, we know how to identify weights that were officially verified in Copenhagen, and the year in which they were first verified. There is, apparently, no indication if the weights had to be periodically checked thereafter.

Notes:

1. Bruno Kisch *Scales & Weights A Historical Outline* Appendix 2 page 228.

Three Scales from a School

BY MIKE SHARPE

In December 2016, I received a very well-written letter from a school in Derbyshire, Central England. Two laboratory technicians had searched 'antique scale collectors' on the Internet and had been given my home address as Treasurer of ISASC (Europe). They were having a clear-out of old scientific equipment from their school, and wondered if our members might be interested in acquiring some.

Over the Christmas break I considered the matter and wrote back, by post and Email, to ask for further details of the scales and weights in question. These I circulated to European members, and to one USA colleague.



The lab technicians Emily and Nina did a great job of documenting the scales, tabulating them with descriptions and photos.

There were 11 lab balances and an assortment of weights. Some people would not consider them antique, although they had been replaced by new technology.

The oldest item was probably 80 years old, and was a traditional self-indicating balance for chemical weighing. Some of the weights associated with the scales were 1 milligramme (0.001 g), and others were marked as Apothecaries' weights in Grains and Drachms/Scruples. The scales themselves were capable of weighing up to 250 grammes, just over 8 ounces.



Figures 1 & 1A. ◀▲ **Item 9** Wm. A. Webb Ltd (Ilford) two-pan balance (in wooden case) **Small Masses** Including a set of 'grain weights'. Examples of the particulars sent by the lab technicians.

Figure 2. ▼▼ The oldest scale, identified as a Griffin & Tatlock pendulum balance.





Figure 3. ▲▲ Square laboratory weights marked on obverse with 'grains'...

Figure 4. ▼▼ ...and on the reverse with the apothecaries' symbols for scruples (a full set?)



Two of the scales were 'electrical', but only in the means of lighting a bulb to illuminate the fine-weighing chart, again to a discrimination of 1 mg.

Altogether the items were representative of a lost age, for teaching scientists of the future the practicalities of weighing – for example by preparing exact quantities of chemicals, and by assessing mass changes after chemical reactions or biological processes. Such equipment was never of a high specification, and tended to have suffered damage or neglect.

Figure 5. ➤➤ Display of the Stanton balance, showing a weight indication of 10.132 grammes.



I had one member (my USA contact) who expressed a definite interest – more on this later. I was able to advise the school of alternative ways of disposing of the items, and offered to buy 3 of the items, plus all the weights, as a donation to school funds.

My intention was to document the 3 most interesting pieces and then dispose of them myself, since I'm the sort of collector who has house-room for information but not for bulky, delicate or electrically-powered artefacts.

My wife Tricia and I went on a 400-mile road trip in March 2017, to pick up the scales from the school. Fortunately the items fitted nicely in the back of my car, and arrived in Kent without any damage.

The most interesting of the 3 scales was probably the Griffin and Tatlock pendulum balance pictured in figure 6.

Carol Hayden had seen the particulars of all the scales involved, and I agreed to send her this example by Air Mail from UK to USA once I'd examined it.



Figure 7. ^^ The cast-iron base of the scale in Photo 6, with identification plate including serial number.

I hadn't realised how heavy the base was (nearly 3 kg), but this meant it wasn't attached to the wood-and-glass case, so I had minimal work to do in extracting it and packing it for transit. Unfortunately I didn't pack it well enough, despite plenty of padding and stuffing, and when it arrived in Texas it was clear it had suffered a sharp impact and needed repair.

Sorry Carol and Bob – lesson learned for next time.



Figure 6. ^^ Griffin & Tatlock 'pendulum balance', with a pendulum resistant and a simple pointer and quadrant scale indication.

Figure 8. vv The condition of the scale above after delivery from UK to the USA – snapped near pivot.



There were two more scales and some weights in what I'd collected from the school in Derbyshire, so I set about noting what I could and repairing obvious faults prior to auction. I'd also been given two documents, since it's always good to see if there is evidence of purchase and servicing with old scales. The first was a Griffin & George Ltd Instruction Sheet:

This demonstrates a change of name from Griffin & Tatlock to Griffin & George in about 1954, and has diagrams of a pendulum-resistant quadrant balance of a more modern design than Carol's scale. The reference to 'Nuffield' is significant in date terms, because the Nuffield Foundation undertook a major educational project in British schools from the early 1960s onward.¹

The equal-armed balance with a "G&T" logo but a Griffin & George name on it was the Microid Duorider model, so-called because of the two rider weights which could be moved along the top of the beam to give added apparent accuracy:



Figure 10. ▲▲ Griffin and George balance with hard plastic base.

The method of use was fairly intuitive, and some dexterity was needed in placing the weights and operating the relieving mechanism. The main component missing was the pendulum bob, which had snapped off its string to the right of the central column. This was required to set the balance level, which would improve its accuracy by an order of magnitude. I managed to find a suitable replacement pendulum bob, then tested this balance for accuracy, sensitivity and repeatability.

The accuracy of the beam was quite good. As can be seen, it was a 9-inch beam, and the knife-edges and bearings were made of agate, rather than stainless steel.

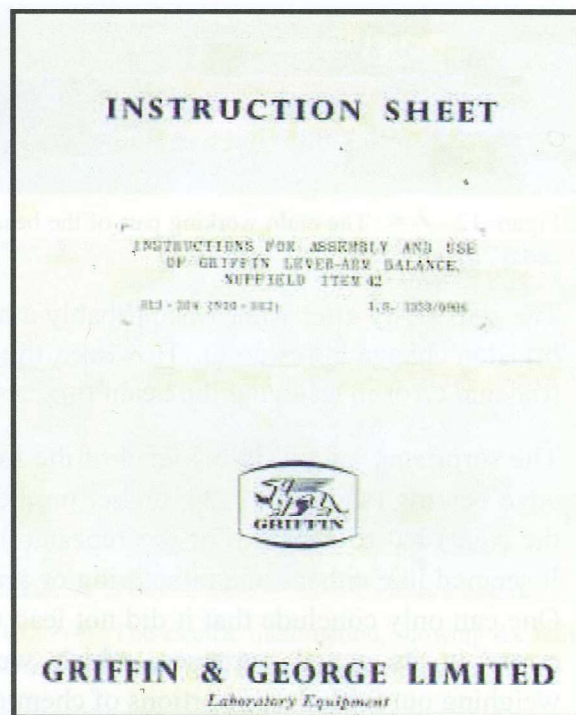


Figure 9. ▲▲ A document unrelated to any of the scales offered.



Figure 11. ▲▲ Generic metric boxed weights set, brass from 100g to 1g, aluminium down to 1 mg.

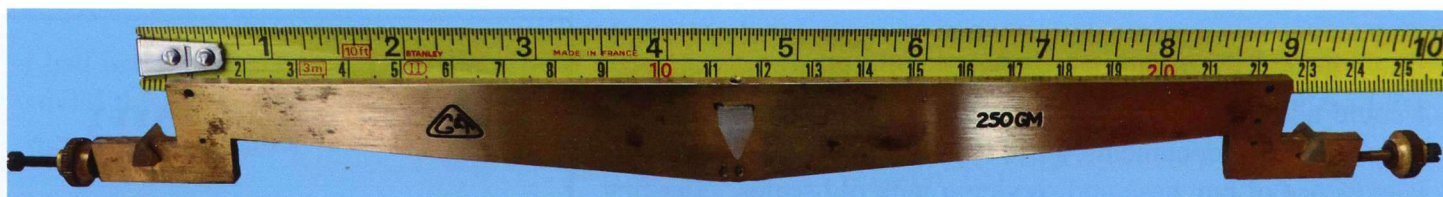


Figure 12. ▲▲ The main working part of the beamscale, showing fulcrum and two load knife-edges, with balancing balls at the ends.

The sensitivity after what was probably a hard-working life was satisfactory, at about two milligrammes per division change in restpoint. However, the repeatability was unsatisfactory, and I found out why after a little trial and error in relieving the beam time and time again:

The surprising 'slope' in the level of the fulcrum knife-edge bearing (shown at right, higher on the left than on the right) led to a failure of the repeatability criterion. It seemed like either a manufacturing or servicing fault. One can only conclude that it did not lead to noticeable errors in its actual purposes, which were probably weighing out fairly large portions of chemicals.

This was an attractive scale to look at, however, and the clear indication of its brand added to its air of scientific authority.

Thanks to the sterling historical researches of Diana Crawforth-Hitchins and others, it is possible to trace a brief family tree of this firm. John J. Griffin & Co. began at the opening of Queen Victoria's reign in 1837. Starting in Glasgow, they actually exhibited their scientific instruments at London's Great Exhibition of 1851. They subsequently based themselves in London. The firm of Baird & Tatlock also originated in Glasgow in the mid-19th century. Making a whole host of scientific instruments and materials, the business called 'Griffin & Tatlock' resulted from a merger in about 1925 and was succeeded in 1954 by Griffin & George, Ltd.² 'Microid' seems to have been a favoured brand designation, applying also to microscopes and other measuring technology instruments from this company.

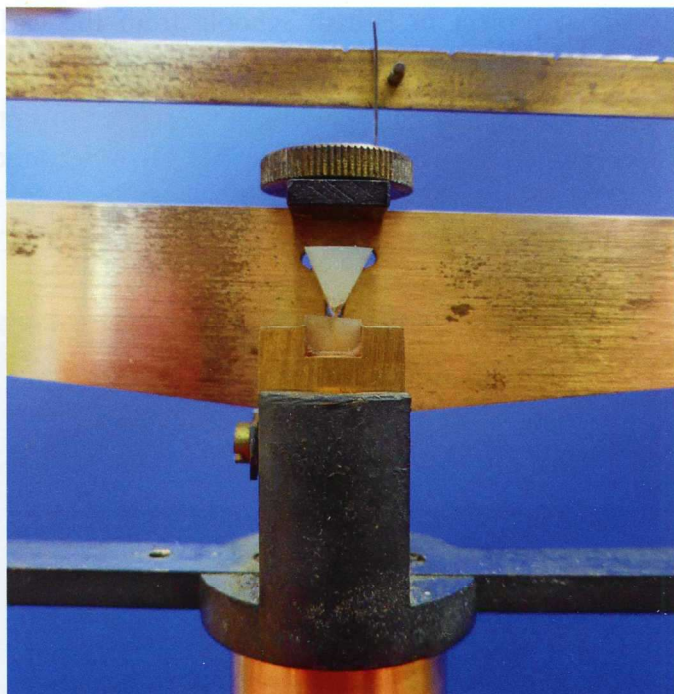


Figure 13. ▲▲ The fulcrum knife-edge on its bearing, which is not planed flat (photo from rear of beam).

The second document was a set of typewritten instructions for the Stanton Instruments Ultramatic UM10 self-indicating single-pan laboratory balance. I therefore decided to check if the balance was in working order. In particular, the lab technicians had listed this item as having a known fault in that the green screen would not illuminate fully.

Some readers may feel that the presence of electrics take away the 'antique' essence of scales. Some electricians would probably reply that this particular circuit is an example of 'antique electrics'.

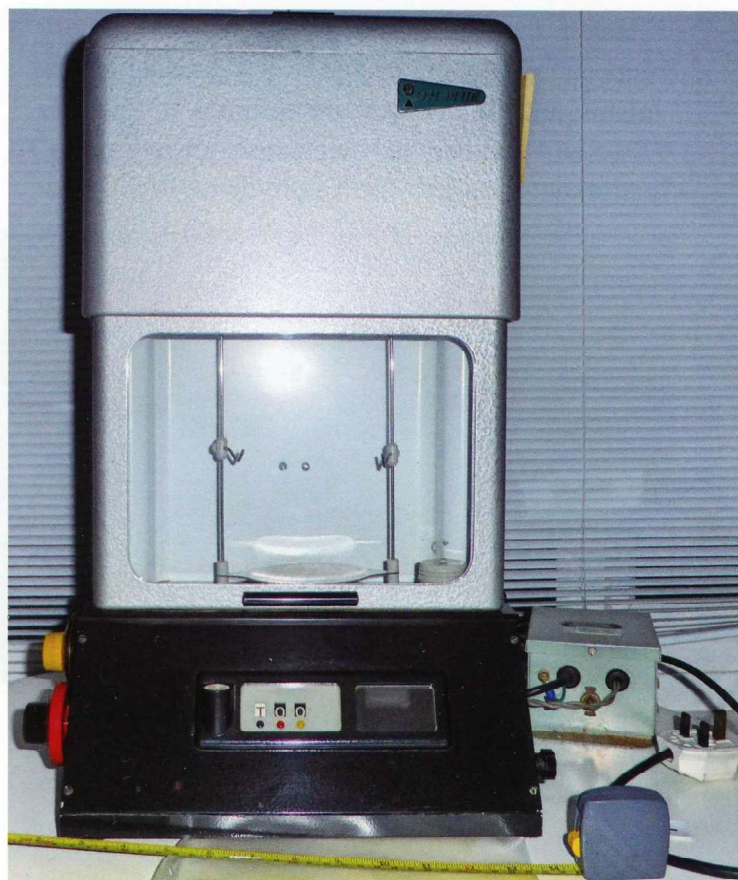


Figure 14. ▲▲ The Stanton Instruments Ultramatic 10 in 'tare' mode, power supply visible to the right.

My judgement to include this item in the investigation is based on the fact that the electricians support the illumination of the pointer, and do not themselves form part of the weighing process. That said, one cannot produce a workable indication of weight if the electricians are not working.

Between the 6V light-bulb and the screen (illuminated as above) is a series of lenses and reflectors. Their purpose is to magnify the transparent grating at the bottom of the scale's pointer, and thus show where the beam has come to rest. What may be a millimetre on the grating becomes 5 millimetres on the screen. This allows for easier reading of the indication, and heightened accuracy by using the Vernier scale (the numbered black strip at the top of the screen above).

In this case, the repair was effected by altering the position of the bulb in relation to the focusing lens, using the adjustment provided on the lamp holder.

Without the casing in place, it is possible to find how the single-pan balance actually works:

Using the same principle developed by Mettler, the unknown weight on the single pan is counterbalanced by progressively adding weights to a hidden set of hangers. The red and yellow knobs on the left correspond to the 10-to-100 gramme series and the 1-to-10 gramme series respectively.

The lab technicians offered the information that the scale had cost the school £800 in 1983. My monthly salary as a Trainee Inspector of Weights and Measures around that time was about £400, so that was a lot of money in those days.

There was a label on the plug of the electric cable stating that it had passed a Portable Appliance electrical safety test in the last 3 years. The cable led to a transformer which reduced our UK 240 Volts AC supply to 6 Volts (6V).



Figure 15. ▲▲ The electric illumination, showing the bulb holder detached from its correct position on the casing.

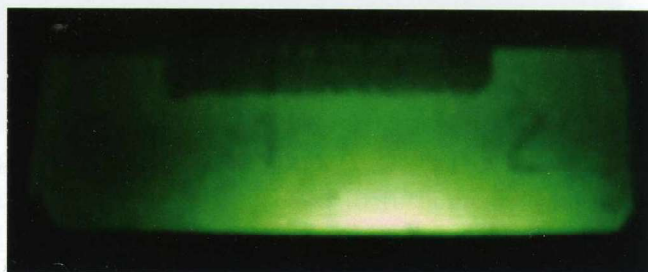


Figure 16. ▲▲ How the green screen should look when properly lit.

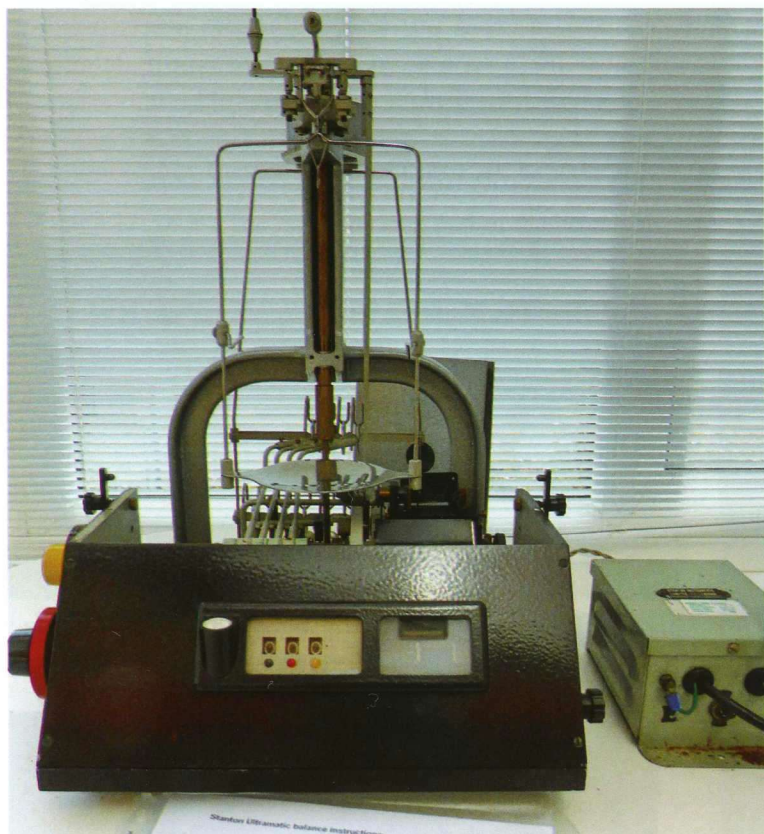


Figure 17. ▲▲ Front view of Stanton Instruments Ultramatic 10 with casing removed.

1969/70. Its price is given as £135 nett. The serial number of the balance from the school was 16799, but at present I have no information how many were produced. Stanton Instruments certainly had a number of export markets, so this model of balance may have found its way to laboratories and schools worldwide.

At the auction to which I sent it for disposal, it was described as 'Avery Berkel balance' because the most recent service sticker had an Avery trade mark on it! Someone else's scale in the same auction was recorded as a 'Griffin & Tatlock balance' because a removable plastic tray inside the casing bore their trademark.

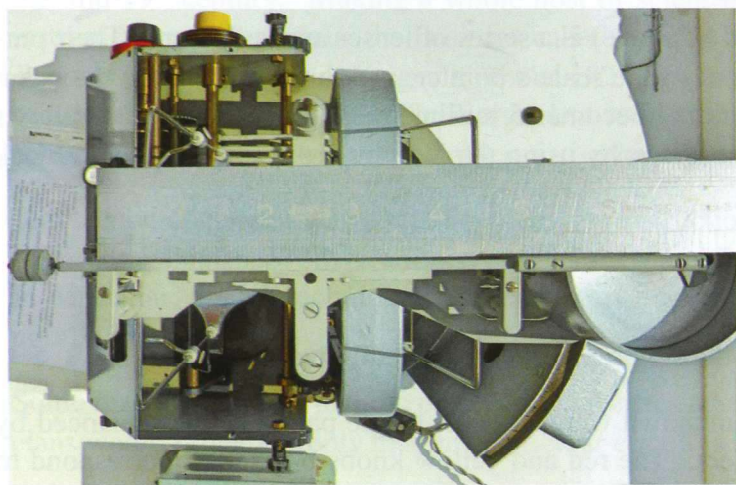


Figure 19. ▲▲ View from above, with ruler added, to show the equal-arm beam measures 5 inches.

Notes:

1. Still going strong today; see www.nuffieldfoundation.org
2. <http://www.gracesguide.co.uk> search term 'Griffin and Tatlock'

I tested the scale and found it would work properly. Those interested in the detailed mechanisms and procedures are referred to Thomas Allgeier's excellent website www.stanton-instruments.co.uk

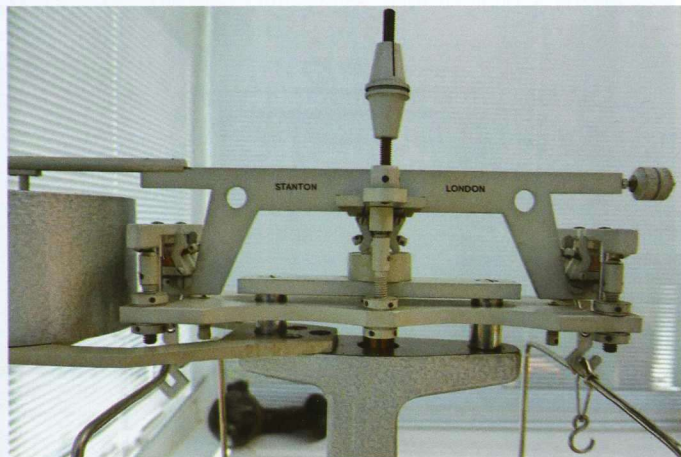


Figure 18. ▲▲ Sideways view of the upper parts of the Ultramatic, showing the beam, air dashpot and bearings.

The Ultramatic UM10 appears in the catalogue reproduced on Thomas's website in 1960, but not

reproduced on Thomas's website in 1960, but not 1969/70. Its price is given as £135 nett. The serial number of the balance from the school was 16799, but at present I have no information how many were produced. Stanton Instruments certainly had a number of export markets, so this model of balance may have found its way to laboratories and schools worldwide.

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It was in fact a respectable Sartorius equal-arm scientific balance from the turn of the 20th century with many distinctive features. An illustration perhaps of the pitfalls of online catalogues as opposed to seeing the articles themselves in the sale rooms.

In conclusion, this was an interesting project which revealed an unknown source of good-quality old-fashioned scales. The prices fetched at auction after my study however were pretty low, indicating a waning of interest in the UK in using or displaying such old workmanlike arte facts.

John H. Ruth's Spuriroscope

BY JUDY & ERIC SOSLAU

Counterfeiting money has been an issue since the first coins were introduced in the seventh century BC and many ISASC members have various devices to check the dimensions and weight of coins. Paper banknotes became common in the United States in the last half of the 19th century and were also widely counterfeited¹.

In the United States the government issued its first paper currency, "Demand Notes", beginning in 1861². Following an extensive redesign of the notes in 1928, J.H. Ruth of Brooklyn, N.Y. applied for a patent on his "device for determining the genuineness of bank notes, etc." Almost four years later, on April 25, 1939, Patent no. 2,155,957 was issued to Ruth and subsequently manufactured under the name "Spuriroscope"³.

The example held in the authors' collection is shown in Figures 1 and 2. The plaque reading "J.Thos Ramstine, Manufacturer, Advertising Specialties, Harlingen, Texas" is covering the original identification of "Ruth Devices Corp., New York, U.S.A". The device, approximately 5.5" in diameter and 7/8" high, is made of a Bakelite-like plastic, although the patent says it could be made of wood or metal. A frame (in this example a matte black) encases an ivory-colored dial containing six holes in which the user's finger can be used to turn the dial, much like an old rotary phone. See Figure 3 from the patent for a diagram of the top and side and of the moveable dial outside of the case.



Figures 1 & 2. ▲▼ The Spuriroscope and an enlargement of the plaque affixed to it.

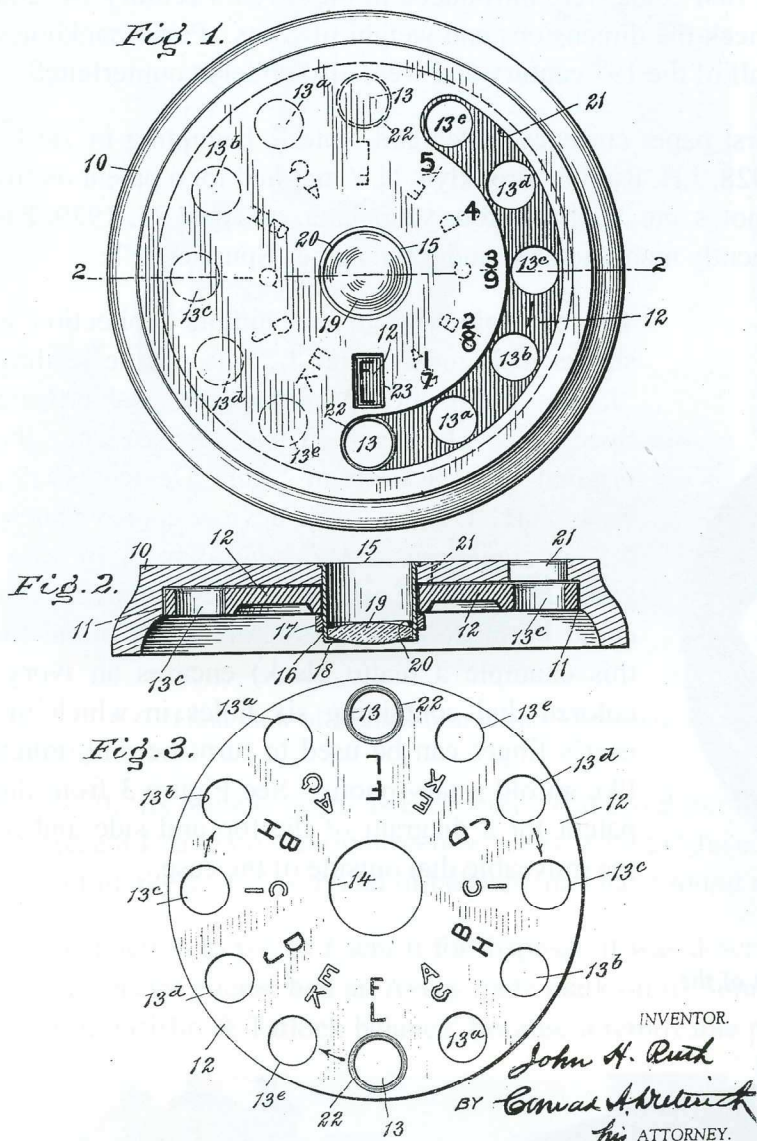


Figure 3. << Patent number 2,155,957 was issued on April 25, 1939 to J.H. Ruth for the Spuriscope to test US Currency for genuineness.

The name Spuriscope presumably came from the word "spurious", meaning not genuine or authentic⁴. According to Ruth in his patent application, his ... invention relates to improvements in means for determining or ascertaining the genuineness of bank notes, bonds, certificates of stocks, and other printed instruments issued to represent money or the like, and the same has for its object to provide a simple, efficient, and easily operated device for accomplishing said object. Further, said invention has for its object to provide an apparatus whereby it becomes possible to check the genuineness of printed instruments evidencing money which bear consecutive or serial numbers in association with other numbers, letters or marks of identification³.

In other words, the invention is to check identification marks on a US bill against another mark on the bill. Specifically, the device calculates from the serial number on a bill what the check letter on the bill should be. If the calculated check letter matches the bill's, the bill is genuine; if it doesn't match, the bill is counterfeit.

This use of a check digit or letter is commonplace in today's world to detect an error in an identification number. A check digit is a number or letter calculated by an algorithm from



the other numbers or letters. Check digits are used to verify input of an UPC on groceries, an ISBN assigned to a book, the VIN on an automobile and a CUSIP assigned to a security⁵. The Spuriscope uses the letter on a bill as a check digit for the Serial number of that bill.

Figure 4 shows an example of the use of a check digit for a bank routing number using the "Modules 10, Straight Summation Method" in which the first number is multiplied by 3, the next by 7, and the next by 1. The 3, 7, 1 sequence is repeated until all of the bank routing numbers have been used and the products are then totaled. If the total is evenly divisible by 10, the routing number is most likely entered correctly⁶. (This method would catch most errors, but not 100%.⁵)

Calculating the Check Digit of a Routing Number

"Modules 10, Straight Summation method"

Our bank's routing number: 113010547

1	x	3	=	3
1	x	7	=	7
3	x	1	=	3
0	x	3	=	0
1	x	7	=	7
0	x	1	=	0
5	x	3	=	15
4	x	7	=	28
7	x	1	=	7
				70

The result is evenly divisible by 10, so the routing number is valid.

Figure 4. ▲▲ This chart shows an example of the use of a check digit for a bank routing number using the "Modules 10, Straight Summation Method."

The dial is slid thru consecutive steps by rotating the dial with a finger in the appropriate hole. First the hole with the red ring is set to the bottom of the curved slot. Then each numeric character in the Serial Number is dialed to the far left (i.e., in the direction of the arrow) except for a zero, 6 or the last numeric character. Figure 6 shows the first number of the serial number, 5, ready to be dialed. The next number is zero, so it is skipped. The 2 is dialed. The next number, a 6, is skipped. Now 5, 8, and 9 are dialed.

All but the last number have now been dialed. Since the letters in the rectangular-window above the 5 are green, the last number is dialed and the result is shown in Figure 7. The letters in the window now are "F" and "L", indicating the check digit should be one of those. Indeed, the check digit in our example is "F" and we can surmise the \$5 United States Note is authentic.

If the letters in the window after dialing the next-to-last number had been red, the user must dial the 3 and then the last number of the serial number.

An example of the use of the Spiriscope

An example using the \$5 United States Note in Figure 5 will illustrate the use of the Spuriscope. The serial number of the bill is F50265894A and the check digit is the letter "F" in the top left and bottom right areas.



Figure 5. ▲▲ \$5 United States Note to be used for example of use of the Spiriscope. Notice the tiny letter F outlined in red. This is the check digit referred to above.



Figure 6. ▲▲ To use the Spuriscope the hole with the red ring is set to the bottom of the curved slot. Next, the first number of the serial number, 5, is ready to be dialed.



Figure 7. ◀◀ After the last number is dialed, the result shown here, of the letters in the window, are “F” and “L”, indicating the check digit should be one of those.

“Directions for the Use” of the SpuriSCOPE, which were included with the Authors’ purchase, are attached as Figure 8 with more detailed instructions and examples. Note the tag line at the bottom “Don’t gamble and hope, use the SpuriSCOPE”!

DIRECTIONS FOR USE

On Current Silver Certificates, United States Notes and Federal Reserve Notes of every denomination (since 1929)

- Before dialing any bill, be sure to set the red-ringed hole at bottom of slot. Dial in direction of arrow.
- Then dial each numeral of Serial Number in succession, up to and including the next-to-last numeral and then STOP. (ZEROS and SIXES are considered numbers but cannot be dialed. If a ZERO or SIX is the next-to-the-last number, stop at the last dialable number prior to that—see second example below.)
- Glance at the pair of letters in sight-opening. If they are GREEN at this point, dial the last number of Serial Number.
- If, however, the pair of letters are RED at this point, you must dial number 3 additionally, then dial the last numeral of the Serial Number.
- Should the Check Letter which appears on face of bill in the upper left or the lower right corner differ from either of the pair of letters in the sight-opening, the BILL IS COUNTERFEIT!

\$1.
Front
Washington
Back
Ornate One

\$5.
Front
Lincoln
Back
Lincoln Memorial

\$10.
Front
Hamilton
Back
U. S. Treasury

Easy-to-follow Examples

X73506186Y

Dial thus: 7-3-5-1-8 then STOP. (8 being the next-to-last numeral). The pair of letters FL appearing in sight-opening being GREEN, you go right ahead with last numeral which in this particular case happens to be SIX.

ZEROS and SIXES cannot be dialed, therefore you have completed the testing of the bill. Should the Check Letter on this bill be any letter other than F or L, the MONEY WILL BE A COUNTERFEIT!

X73506069Y

Dial thus: 7-3-5 then STOP. (5 being the next-to-last numeral). The pair of letters CL appearing in sight-opening being RED, you must dial an additional 3, then the last numeral. The correct Check Letter on this bill must be either C or L. If any other Check Letter should appear, the MONEY WILL BE A COUNTERFEIT!

\$20.
Front
Jackson
Back
White House

\$50.
Front
Grant
Back
U. S. Capitol

\$100.
Front
Franklin
Back
Independence Hall

Guarantee

We warrant each SPURISCOPE to be free from defects in material and workmanship, and will replace at our expense at our factory any defective part or parts thereof, which shall within one year after delivery to the purchaser, be returned to us, transportation charges prepaid.

WHEN THE SPURISCOPE SHOWS IT'S COUNTERFEIT—IT'S COUNTERFEIT!

"DON'T GAMBLE AND HOPE. USE THE SPURISCOPE!"

RUTH DEVICES CORP.

11 BROADWAY • WHITEHALL 4-5588 • NEW YORK 4, N. Y.

Figure 8. ▲▲ Detailed directions that were included with the SpuriSCOPE.

What is the underlying reasoning of the Spuriscope?

When United States currency was redesigned in the last half of the 1920s, the new notes were smaller than those from previous series, and The Bureau of Engraving and Printing was able to print 12 bills to a sheet rather than the previous 8². The format of a 12-subject sheet⁷ is illustrated in Figure 9.

The Spuriscope basically worked by dividing the Serial Number by 6⁸. Notice the differences of the side-by-side numbers on the face of the Spuriscope are always 6. Notice also the letters in the window of the Spuriscope are side-by-side on the 12-subject printing sheet.

Format of 12-Subject Sheet	
A	G
B	H
C	I
D	J
E	K
F	L

Figure 9. ▲▲ The format of a 12-subject sheet.

What should we make of the usefulness of the Spuriscope?

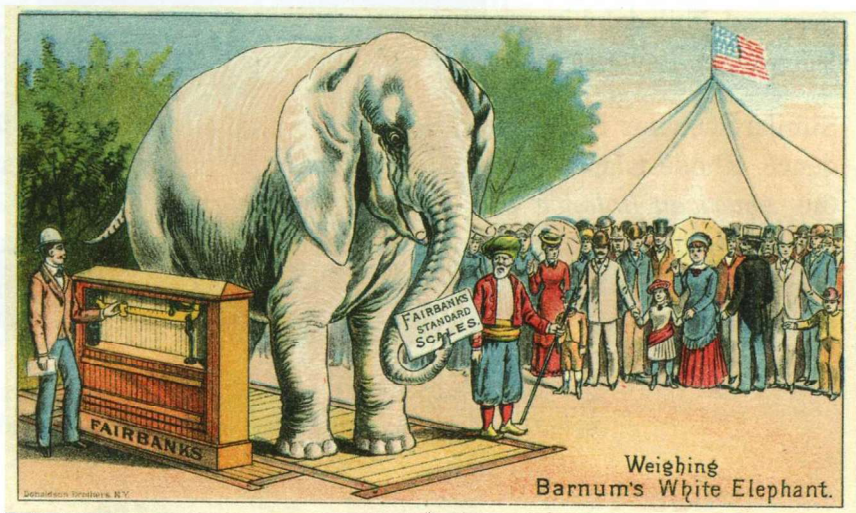
The Spuriscope no longer works because new bills are generally printed on sheets of 32 or 50²; i.e., not evenly divisible by 6. Granted, the Spuriscope would calculate the check digit of a bill issued before 1952². However, why would a counterfeiter not always use the Serial Number from a valid bill? Or if he was able to have the Serial Numbers be sequential, why not start with a valid bill and coordinate the check digit with the format of the printing sheet? Sorry, the Authors cannot answer. But we have enjoyed the device, especially its early use of the check digit concept which is so widely present in our lives today whether we are aware of it or not.

Notes:

- 1 www.nbbmuseum.be/en/2010/06/counterfeiting.htm
- 2 <https://www.moneyfactory.gov/uscurrency/history.html>
- 3 <https://patents.google.com/patent/US2155957A/en>
- 4 www.learnersdictionary.com/definition/spurious
- 5 https://en.wikipedia.org/wiki/check_digit?oldid=715618879
- 6 www.bankswiftcode.org/blog/how-to-calculate-the-check-digit-of-a-routing-number-from-an-illegible-check
- 7 www.uspapermoney.info/general/note.html
- 8 <https://currency.ha.com/itm/miscellaneous/spuriscope-counterfeit-detector/a/3537-23212.s?ic4=OtherResults-SampleItem-071515>

Old Advert

This old Victorian trade card is entitled *Weighing Barnum's White Elephant*. Its reverse reads as follows: *Go to Fairbanks & Co. No 382 Broadway, Albany, N.Y. for Steam supplies, Hancock inspirators, Pratt & Cady valves, Asbestos packed cocks, stationary and portable engines, and Scales of every variety.* It measures 5" by 3" and was printed by Donaldson Brothers, N.Y. (ca. 1872-1879)



The American Way of Weighing Hay

BY DEBORAH WARNER

After seeing a farmer unload his hay and weigh it *with steelyards in parcels of 200 lbs. at a time*, Benjamin Franklin turned to Stephen Paschall, and asked if he could *make scales to weigh heavy loads*. Paschall—a cutler and early member of the American Philosophical Society—answered his friend: *I can make scales to weigh all of Philadelphia*.¹ While this story might not be literally true, it does remind us of a once important and now largely forgotten technology.

The American story began in April 1737, when the Selectmen of Boston considered selling hay by weight, rather than by the wagon load or half load. A few months later, a local man named Nathanael Wardell, Jr. presented a proposal for erecting a suitable engine, noting that he had found gentlemen who would defray the cost if the town would oblige all persons who buy hay *Brought to Market in Carts or other Land Carriages* to have it weighed at his engine. After having been named weigher of hay in Boston, Wardell erected his engine at the market at the South End of town. Some years later, after Wardell had moved his engine to Roxbury, the Selectmen acquired another one for this purpose. In 1758, they decided that a *suitable Person be from Time to Time appointed to take Care that the Engine for Weighing of Hay be kept in good Repair, and to see the Weight of all Hay thus brought to Market, and to Tally the same, and mark the Carriages on their return*.²

The fact that the Bostonians did not make a great fuss about their hay engine suggests that they did not view it as novel or remarkable. Maybe they knew that a German mathematician and mechanic named Jacob Leupold had published an account of a similar device in 1717 and erected an example in Leipzig.³ Or maybe they saw their hay engine as simply a substantial steelyard for weighing heavy loads, of the sort that could be seen in numerous European cities and town.

Be that as it may, the idea caught on quickly. In Salem, Massachusetts, a blacksmith named Joseph Buffum was given permission to erect *an engine for weighing hay* in 1747; in 1768, the town decided to have another hay scale built, and use the proceeds for public purposes.⁴ The residents of Newburyport, in 1753, *granted liberty to Samuel Titcomb and John Harris to build a substantial engine to weigh hay, to stand where the old engine stood near the head of Fish street*. A few years later, these residents approved a petition from James Knight and others for liberty to erect hay scales on the highway.⁵ New Yorkers decided, in 1762, *that proper and convenient machines, or engines, and scales and weights for weighing carts and waggons, and hay, shall be made, erected, and furnished, and provided, at three places in this city*.⁶ In the late 1760s, the Provincial Assembly in Pennsylvania authorized the construction of a Hay Scales Wharf in Northern Liberties, and Philadelphia established a committee to *consider of proper places for fixing public scales for weighing of hay near the upper and lower ends of the town*.⁷

Similar accounts from other American communities are easily found. Dr. Arnold, an apothecary in Providence, Rhode Island, unveiled his Statera (the Latin word for steelyard) in December 1772, claiming that this *American Balance* was designed *For weighing with Ease and Accuracy any Weight from 4 to 8400 Pounds*. Arnold also referred to this device as a Hayward, indicating that it was especially suitable for bundles of hay. After Arnold had betrayed the American cause, Dr. Randal bought the Statera and announced he would weigh hay on the most reasonable terms.⁸

Other accounts suggest that hay scales were substantial structures that could serve as landmarks. Thus, for instance, Thomas Dunn, a craftsman from Dublin, advertised that he lived *on Cow-Foot Hill, near the Hay Scales* in New York. William Siddell, a bookbinder from London, let it be known that he had a shop *near the Hay Scales* in Newport, Rhode Island.⁹

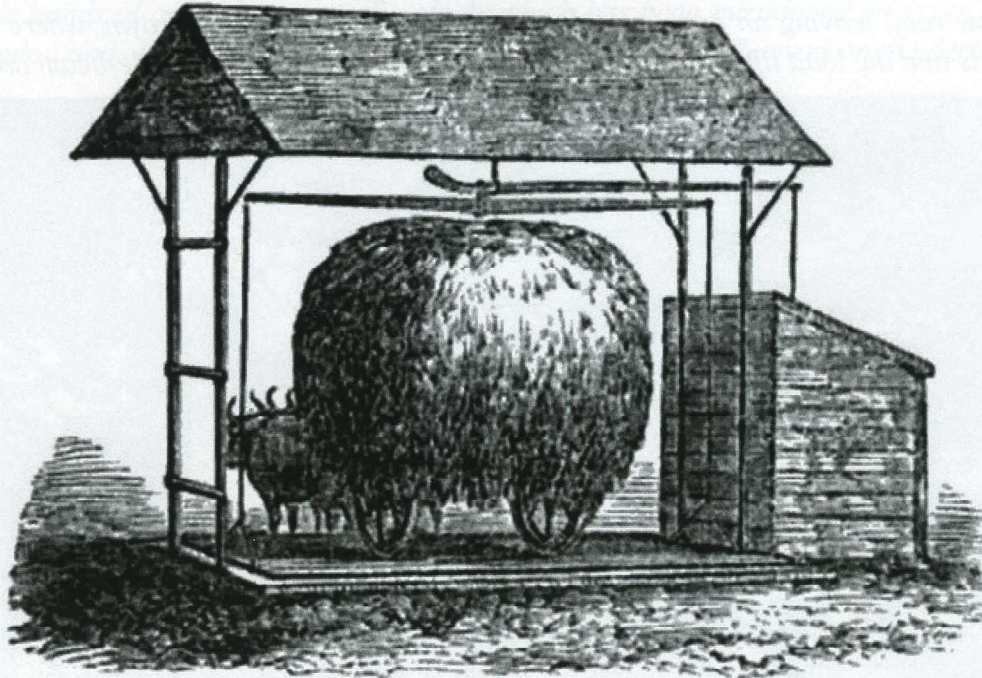


Figure 1. ▲▲ “The Old Hay Scales” from Nathaniel Bouton, *The History of Concord* (Concord, 1856), p. 539.

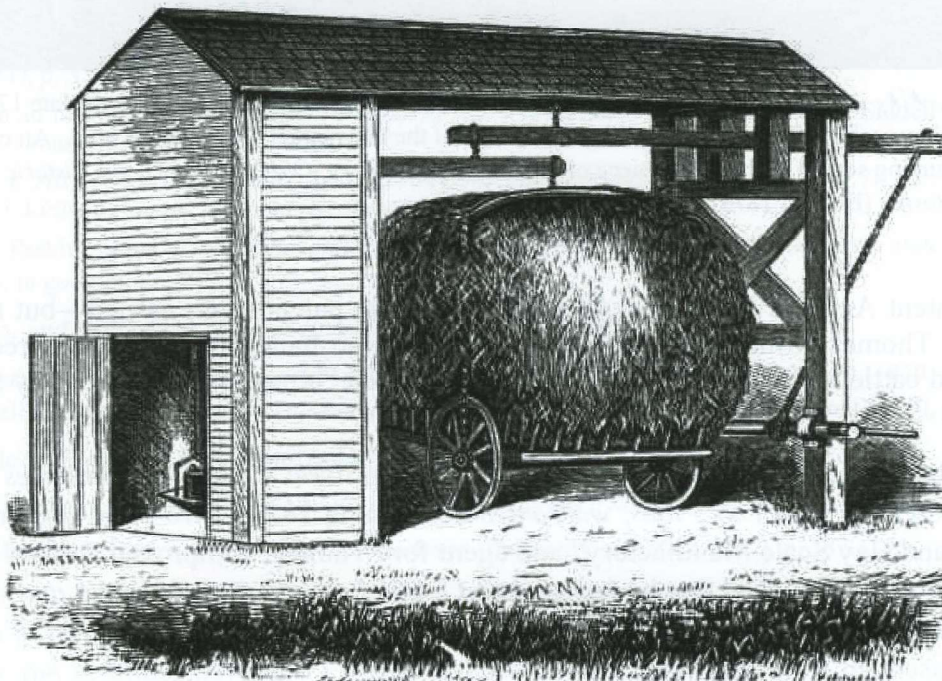


Figure 2. Nathaniel Walker’s first hay-scales in Topsham, Maine, from George Augustus Wheeler, *History of Brunswick, Topsham and Harpswell, Maine* (Boston, 1878), p. 613.

In his *History of Newburyport, Mass.*, John James Courier reported that in 1785, the selectmen paid Thomas Harvey eighteen pounds “for materials used in building the hay scales.” He then explained that *The frame that supported the formidable structure was made of wood, high enough and wide enough, to admit a wagon loaded with hay. From a large overhead beam, heavy chains came down to the ground. When these chains were fastened beneath the wagon the whole load was raised by means of blocks and falls, so that it swung clear and its weight could be easily ascertained.* The hay scales in Vergennes, Vt., were described as two ends and a narrow roof, leaving an open space into which the load could be drawn, where chains were fastened to the wheels and the load lifted by a windlass and the weight found by a scale-beam and poise.¹⁰

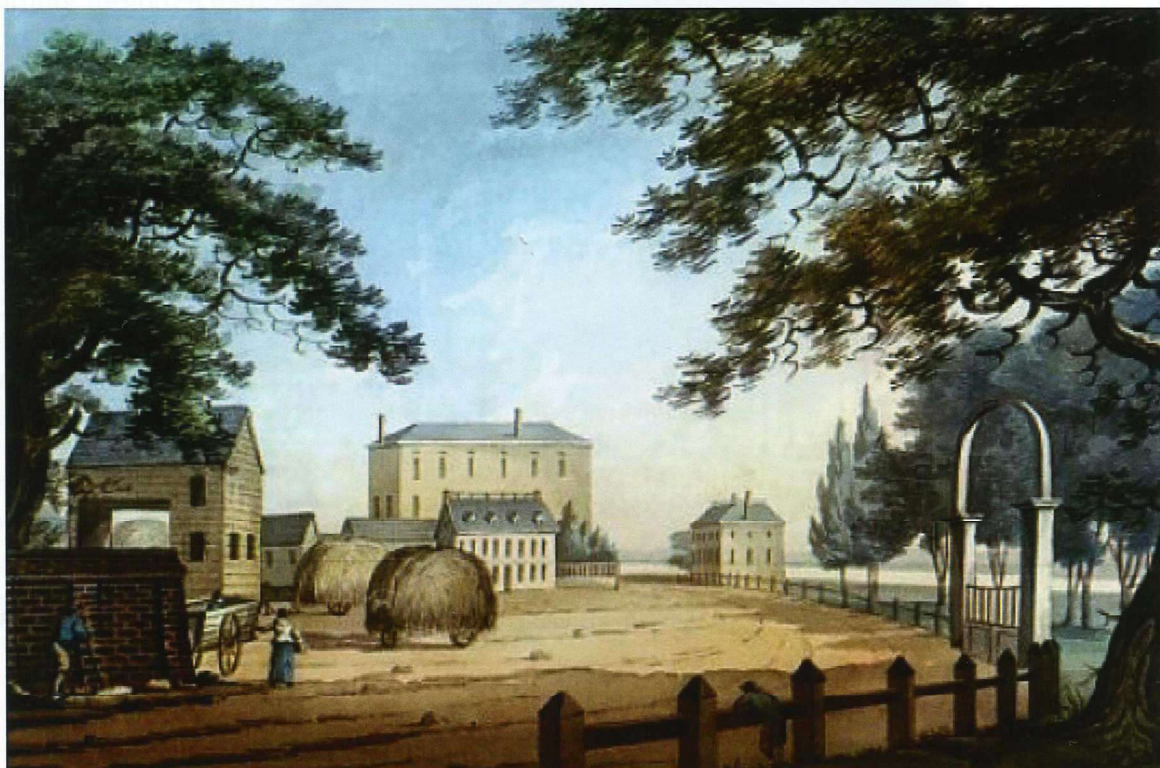


Figure 3. ▲▲ Archibald Robertson, a Scottish artist who visited the United States in the late 1790s, included a hay scale (left front) in his watercolor image of the Haymarket Theater in Boston. An engraving of this painting served as the frontispiece of Samuel Adams Drake, *Old Landmarks and Historic Personages of Boston* (Boston, 1873).

Following the Patent Act of 1790, a few American hay scale patents were issued—but the details here are sketchy at best. Thomas Armat, a Philadelphia merchant who hailed from England, received a patent for weighing hay and cattle in 1811.¹¹ John W. L. Hogue erected “a patent Balance or hay Scales” in Carlisle, Pa., in 1819.¹²

A Boston entrepreneur named Joseph R. Newell was selling *Sivret’s improved Balances for weighing Hay, Live Stock, &c weighing from 1 to 5 tons, warranted accurate* in 1827. Two years later, now proprietor of a “Patent Balance and Hay Scale Manufactory” and agent for “Thomas’s Improved Patent Hay Scales, and patent balances,” Newell announced that he *has on hand a good assortment of correct and well finished patent Balances of all sizes—and will furnish at the shortest notice his improved Hay Scales of any size or weight.* In another advertisement from that year, Newell offered *Willis’s improved platform hay scales [that] weigh from one to ten tons*, adding that *The scale which is very simple and easy in its operation, is very durable, and not liable to get out of order, and does not cost one half the price of a common Platform Scale.*¹³

The James River Company built a hay scale house in Richmond, Va., in 1810. And, according to an early history, *As such a machine was considered beyond the skill of any American mechanic to construct, it was ordered from England.*¹⁴ The reference here was probably to Robert Salmon, an Englishman who had received an English patent (#2095) for a *new invented improvement in the general construction of certain machines for the purpose of weighing any kind of goods, merchandizes, carriages, waggons, &c.* in 1796. A memoir published in 1821 noted that Salmon had invented and patented *a weighing machine, which exhibits the weight by the hands of a dial like that of a clock, which has been introduced on several of the turnpike roads round London and elsewhere; and prevents the frauds of machine-keepers on the carters.*¹⁵

The history of the old hay scales came to an abrupt end in 1830 when E. and T. Fairbanks obtained the first of their many patents for platform scales. Indeed, an early account of the firm explained that their manufactures *were confined to hay scales.*¹⁶

Notes & References:

1. Townsend Ward, Granville J. Penn, and George Sharswood, "Second Street and the Second Street Road and Their Associations," *The Pennsylvania Magazine of History and Biography* 4 (1880): 401-431, on 406. Whitfield Bell, *Patriot Improvers* (Philadelphia, 1999), vol. 2, p. 187.
2. *A Report of the Record Commissioners of the City of Boston, Containing the Boston Records from 1729 to 1742* (Boston, 1885), pp. 176-177, and 210. Boston, *The By-Laws and Orders of the Town of Boston* (Boston, [1758]), p. 14.
3. Eugene S. Ferguson, "Leupold's 'Theatrum Machinarum': A Need and an Opportunity," *Technology and Culture* 12 (1971): 64-68.
4. Joseph Felt, *Annals of Salem* (Salem, 1845), vol. 1, p. 249. Robert S. Rantoul, "Washington in Essex County," *Essex Institute Historical Collections* 58 (1922): 1-18.
5. John J. Currier, *History of Newbury, Mass. 1635-1902* (Boston, 1902), p. 265.
6. [New York], *Minutes of the Common Council of the City of New York* (New York, 1905), vol. 6, pp. 298-300. Thomas F. De Voe, *The Market Book* (New York, 1862), Vol. 1, p. 73.
7. "Annals of Philadelphia," *The Register of Pennsylvania* 2 (1828): 199. Notice of the public scales for weighing hay in *Pennsylvania Packet* (Nov. 1, 1781), p. 3. John Thomas Scharf and Thompson Westcott, *History of Philadelphia* (Philadelphia, 1884), vol. 3, p. 2144.
8. Ad for "Arnold's Statera" in *Providence Gazette* (Dec. 12, 1772), p. 3; and for "Dr. Randal" in *Providence Gazette* (Oct. 24, 1784), p. 3.
9. Thomas Dunn ad in *New-York Gazette and Weekly Mercury* (June 26, 1769), p. 3. William Siddell ad in *The New-York Mercury* (January 6, 1772), p. 1.
10. John J. Currier, *History of Newburyport, Mass: 1764-1905* (Newburyport, 1906), vol. 1, p. 78. Henry Perry Smith, ed., *History of Addison County, Vermont* (Syracuse, 1886), p. 682.
11. Lawrence A. Peskin, *Manufacturing Revolution: The Intellectual Origins of Early American Industry* (Baltimore, 2003), p. (n.p. in google). Fn 45
12. *Charter, Laws, and Ordinances of the Borough of Carlisle* (Carlisle, 1824).
13. J. R. Newell ad in *New England Farmer* 5 (1827): 311. Newell ad in *New England Farmer* 7 (1829): 7. Newell ad in John B. Russell, *Catalogue of Kitchen Garden, Herb, Tree, Field, and Flower Seeds* (Boston, 1829), p. 86.
14. Samuel Mordecai, *Richmond in By-Gone Days* (Richmond, 1856), pp. 113-115.
15. "Memoirs of Mr. Robert Salmon," *The Monthly Magazine* 52 (1821): 468-471.
16. J. Leander Bishop, *A History of American Manufactures* (Philadelphia, 1864), vol. 2, p. 782.

Paddy Whyte's Story

BY PADDY WHYTE

I have been associated with the weighing trade for over 60 years. Since my retirement, I spend much time visiting antique outlets. Now I am the proud owner of over 200 antique scales, but how things have changed. Now the dealers have so little to offer in my line.

Some day soon, I intend to offer to sell my complete collection.

Now I have taken up a new challenge to study the history of very old weighing ideas not known to me before.

Some months past, I accidentally came into possession of two sets of brass PRO Weights. I was sure they were used in the scale industry some where, some time, but try as I did day and night, no progress.

The break eventually came when, on an industrial group tour to Scotland, we visited a boat building factory. At the morning tea break, I showed the photo of my pro weights, but only one of the workers showed interest. He gave me the phone number of an engineering company that might answer my questions. They were very helpful and I received details of an experiment that I dreamed of:

1. The weighing scale is a vital component on the pressure apparatus,
2. The beam fitting is mounted on top of the tank, and
3. scale charts immersed in liquid to measure the strength of the boat bottom material.



DESCRIPTION

Cussons P6237 Centre of Pressure Apparatus consists essentially of a toroidal quadrant pivoted on its centre line on a balance arm above a water tank, as in Fig. 1. The fabricated toroidal quadrant, which has dimensions of 100 mm internal radius, 200 mm outer radius and 75 mm width, is mounted on the balance arm so that its rectangular end face is vertical and the two curved faces are concentric with the line of action of the knife edge pivots. Thus, the hydrostatic forces acting on the quadrant when immersed, only the force on the rectangular end face gives rise to a moment about the knife edge axis. In addition to the quadrant clamping screw, the balance arm incorporates a balance pan and an adjustable counter-balance.

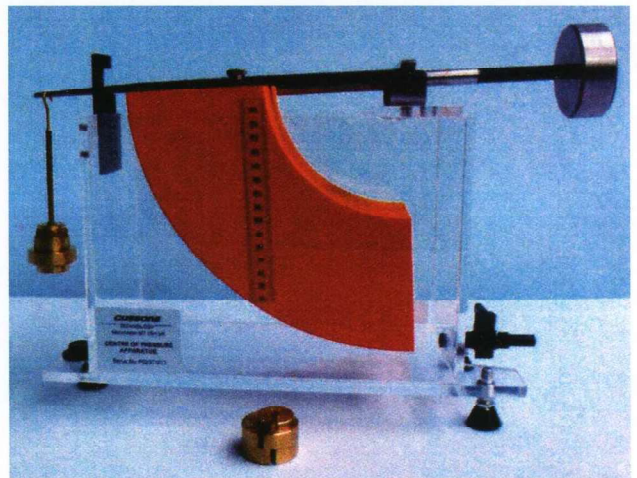
The perspex tank has an integral base which may be levelled by adjusting the three screwed feet. Correct alignment is indicated on the circular spirit level attached to the base of the tank. The top of the tank has a bridge piece at one end with integral pivot supports whilst at the other end of the tank there is a balance arm restraint and datum level indicator.

Water can be poured into the top of the tank from a suitable container and may be drained through the drain cock at the base of the tank, to which a length of flexible tube may be attached. The water supply may be obtained from the outlet of the P6100 Hydraulics bench.

The water level is indicated on scales which are engraved onto the side face of the quadrant. The scale is split at the top of the end face to indicate the change from partial to total immersion.

EXPERIMENTAL CAPABILITIES

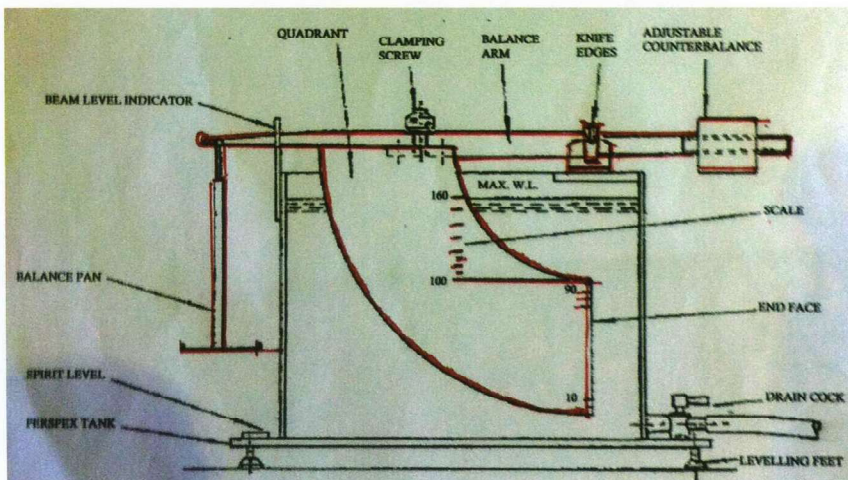
- ◆ Measurement of the static thrust on a vertical water submerged surface.
- ◆ Determination of the Centre of Pressure of a vertical water submerged surface.



Overall the journey I took to learn about the new weights was of huge satisfaction to me.

I was amazed not only that I would come across a set of weights that I had previously not been aware of, but also to learn how they were actually used was a real bonus.

Through a lot of research it was a real thrill for me to discover that my prized set of brass pro weights were used in the Cussons P6237 apparatus system showing weighing scale chart moving in immersed liquid.



DIMENSIONS AND WEIGHTS

Net:- 560 x 190 x 520 mm, 4.5 Kg.

Gross:- 0.066m³, 6.0 Kg.

Note:

See also:

www.cussons.co.uk

From the Collection of

BY KATHY & STEVE BARNETT

This is an iron framed household scale. It has a pendulum with a very large iron disk which serves as the counterbalance. There is a locking mechanism to keep the pendulum from swinging when the scale is being moved or not used. The brass goods pan on the top is used to weigh objects up to 10 KG. The brass cup pan which is suspended on the side from an arm is used to weigh up to 400 grams. It was probably used for preparing food for cooking. It was made sometime after 1876 when Sweden adopted the metric system.

The painted dial on the front contains information in Swedish about the scale. It was made by Jernbolaget, a manufacturer of tools, knives and other household items. Their factory is in Eskilstuna, a city in Sweden located 69 miles west of Stockholm. The dial also contains instructions, *Bruksanvisning*, for using the scale. The emblem painted on the dial and stamped in the frame above the dial is an anchor topped by a crown with a capital E in front of the anchor. It is the trademark for Jernbolaget.

We bought the scale from an antique dealer in Springfield, Ohio. How did it get from Sweden to the Midwest? Probably it was brought as an important household object by a family of Swedish immigrants who settled in that area.





EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2017 ISSUE NO. 3

PAGES 4385 - 4412



Cover Picture

This measure is marked US Standard Half-Bushel 1842. Below that is stamped with the Federal Eagle and the letter B which indicates it was issued by Superintendent of Weights & Measures A. D. Bache. It is number 118. The Congressional Report of 1857 stated that 162 of these measures had been produced.

Authorized in 1835, it took years of preparation to produce and distribute Standard Weights and Measures to the states. Made of solid brass, it originally had a ground glass cover. It weighs 48 pounds 13 ounces, measures 13⁷/₈" inside diameter and is 7" deep. The outside height is 7⁵/₈" by 16¹/₂" in diameter.

Bill & Jan Berning Collection.

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Southwark Scale Company

BY KURT BEYREIS

Southwark History Summary

The Southwark Scale Company started as the Southwark Hardware Company located at 51 N 2nd in the Southwark section of Philadelphia in about 1873. In those days, a hardware store was just another name for an ironmonger. The Southwark Hardware Co. made scales in the early years before brothers John and George Lawrence learned the trade as apprentices at the store until, in 1881, they bought the business and shortly after, renamed it to Southwark Scale Co. Between several scale patents by John and purchases of other scales, the business began to grow. As they outgrew their Southwark location, they purchased property at 2nd & Pine in Camden, New Jersey. They moved there in 1904 and at one point had 25 people working in the Camden plant. A summary from the 1904 Bureau of Industrial Statistics of New Jersey follows:

The Southwark Scale Company of Philadelphia has purchased a parcel of land in Camden, 60x183 feet. It is said to be the firm's intention to alter the three story brick building on the premises to meet the needs of its business and to erect such other buildings on the property as may be required. Other factories operated by the company at Philadelphia, Lansdale and North Wales, Pennsylvania, may finally be concentrated at Camden.

Their advertising was very aggressive during this period as indicated in the *SCALE JOURNAL* ad below. The trademark shown in the advertisement in figure 1 did not appear in any ads or scales in the earlier years of Southwark Scale Co. According to the October 25, 1914, issue of *Scale Journal*; *The Southwark Scale Company of Camden, N.J., was established in Southwark in 1873. The company advertises that it manufactures the "Largest variety of counter scales in the world, also platform scales, and Lawrence Perfect Weighing Machines."*



**All our scales are guaranteed and
have above trade mark on each scale**

**We make the largest line of counter scales in the world—
AGATE and STEEL**

Our Motto, "EQUAL TO THE BEST AND LOWER IN PRICE"

Catalogue and prices mailed on application

SOUTHWARK SCALE CO., CAMDEN, NEW JERSEY

Figure 1. ^^ Advertisement from December, 1914, issue of *Scale Journal* featuring Southwark Scale Company in Camden, NJ.

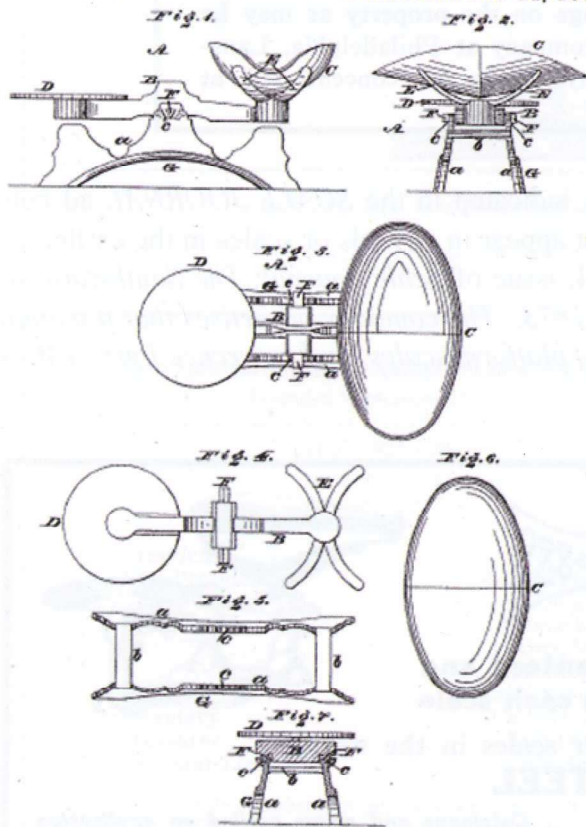
Over the next 16 years their scale business gradually declined from the peak in 1904. The combination of George's death in 1918 and limited supply of raw materials in 1917-1918 due to the requirements of World War I, also contributed to the decline.

After 1921, almost nothing was found regarding the scale business but it appears that it may have been then centered around the foundry business of producing castings and other metal work mainly from patterns and plans provided by customers. John was listed in the 1930 Philadelphia Census as retired. He died on March 27, 1931. There is no indication that the company continued after he retired. John and George were both born and had their homes in Philadelphia all their lives.

Southwark Scales

The first scale patented by John Lawrence, on June 24, 1884, was a toy scale. It is one of the type of small cast iron toy scales that are rarely labeled. The patent is illustrated in figure 2. No examples are known. However, one version of a toy scale that was produced was a miniature of the full-sized scale shown in figure 4 with the rotating weight plate. Only one example of this toy scale has been documented. (Figures 3-5)

(No Model.)
J. F. LAWRENCE.
TOY SCALE.
No. 300,875. Patented June 24, 1884.



WITNESSES:
S. B. Evans,
L. Dowell

INVENTOR:
J. Franklin Lawrence
John A. Biedersheim
ATTORNEY.

U. S. PAT. OFF. PHOTODUPLICATION SERVICE

Figure 2. ▲▲ The Patent for the Lawrence toy scale.



Figure 3. ▼▼ Side View.



Figure 4. ▼▼ Top view with pan.



Figure 5. ▲▲ Top view without pan.

The next scale John Lawrence patented was the combination scale/rotating plate to hold the weights and a twine holder, complete with a notch to cut the twine. They manufactured this scale in several sizes up to 16 pounds capacity. This scale is often found with the Philadelphia origin. They all have an "IXL" which is likely the model name. The scale and label plate are pictured in figures 6 through 9 below:



Figure 6. ▲▲ The first full size Southwark shop scale included a revolving weight tray and a twine holder for use in stores where most purchases were wrapped and tied with twine.

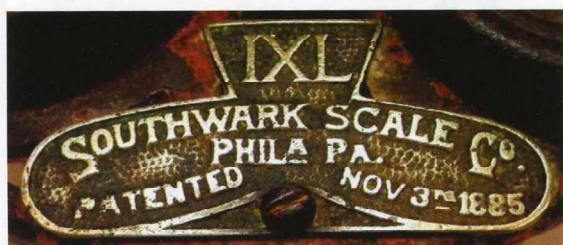


Figure 7. ▲▲ Label showing patent date.



Figure 9. ▲▲ Label position on weight tray.



Figure 8. ▲▲ Southwark shop scale with twine holder open. The original decorative details show in this photo.

It was patented on November 3, 1885. The patent is shown below in Figure 10.

(No Model.)

J. F. LAWRENCE.

COMBINATION SCALE, WEIGHT TRAY, AND TWINE BOX.

No. 329,655.

Patented Nov. 3, 1885.

Fig. 1.

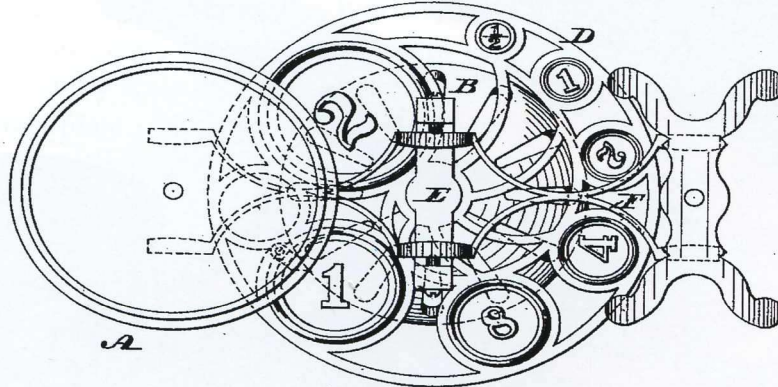


Fig. 2.

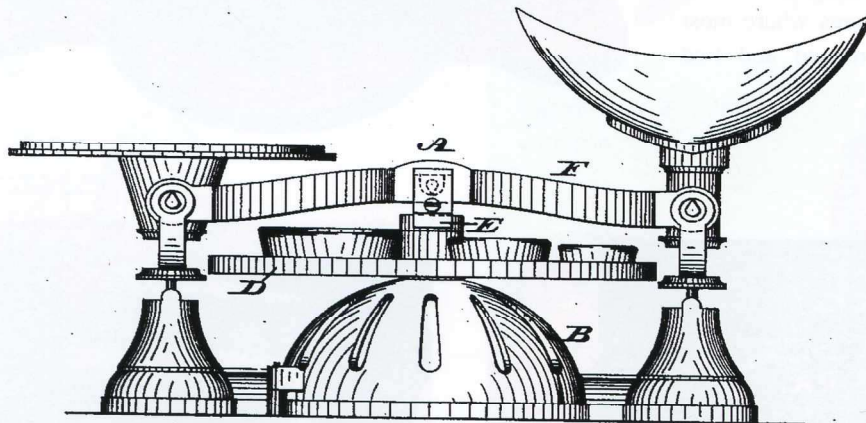
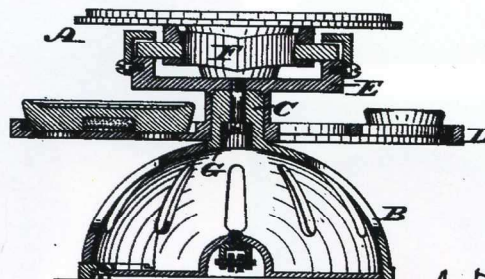


Fig. 3.



WITNESSES:

Sp. B. Grants
H. F. Kircher

INVENTOR:

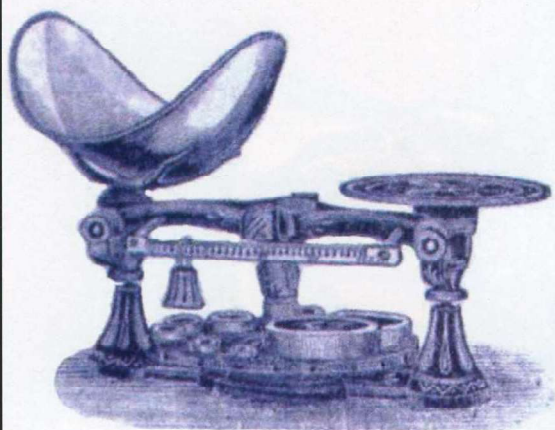
J. Franklin Lawrence
BY *John A. Diederich*
ATTORNEY.

Figure 10. ▲▲

In *The Iron Age* of January 25, 1894, the following article appeared on page 191. The poise on a steelyard is often referred to as a pea or pea weight, especially in the southern US States. We assume that the article is referring to the poise as a pea weight.

I X L Scale.

The Southwark Scale Company, 415 South Second street, Philadelphia, Pa., are putting on the market the scale shown in the accompanying illustration. The standard is of iron and the pivots of fine tool steel. The weight holder is of iron and revolves in either direction, thus bringing the weights instantly to hand and obviating the necessity of a weight block. The beam



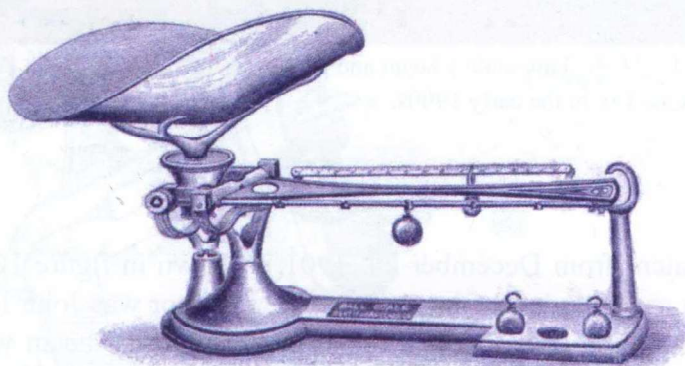
I X L Butcher Scale.

is of brass and the pea weight of iron painted. The weights are supplied in iron or brass, as desired. The scale is handsomely painted and decorated and is made in three styles, counter and butcher scales without beams, and butcher scale with beam, as illustrated. The counter scale is supplied with any kind of scoop required. The scale is made in sizes running from 2 pounds to 16 pounds, and is designed to meet the demand for a cheap and reliable scale.

In *The Iron Age* of March 18, 1897, the following article appeared on page 46.

Pendulum Ball Scale.

Southwark Scale Company, Philadelphia, Pa., have brought out the Pendulum Ball scale for grocers and general storekeepers shown herewith. It has a capacity of



Pendulum Ball Scale.

16 pounds by quarter ounces, is finished in red and gold, and is 18 inches long. Seamless scoops of brass or tin, 19 x 10 inches, are furnished. The peculiarity of this scale is the pendulum attachment to balls, which is said to insure great accuracy. The side beam for weighing small quantities is elevated so as to be more readily seen, the notches indicating quarter ounces. The notches in the other beam record even pounds.

Another scale manufactured by Southwark is pictured in figure 11. It has been named by collectors who have called it a centipede, caterpillar, typewriter or modified ball scale depending on who was talking. The centipede or caterpillar name probably comes from the fact that the weight hangers for the brass weight look like little legs. The typewriter name has to do with the shape and look of the pound indicators. Finally, if the scale is categorized by function, it is a modified ball scale.

The scale was refurbished and had both AMERICAN MACHINERY CO., 1886 PHILADELPHIA and CENTIPEDE SCALE painted on the base of the scale and on the weight holder respectively. A search of the internet did not provide any information of AMC of Philadelphia being in the scale business or that the scale was actually named *The Centipede Scale*. It was, in fact, made by Southwark.

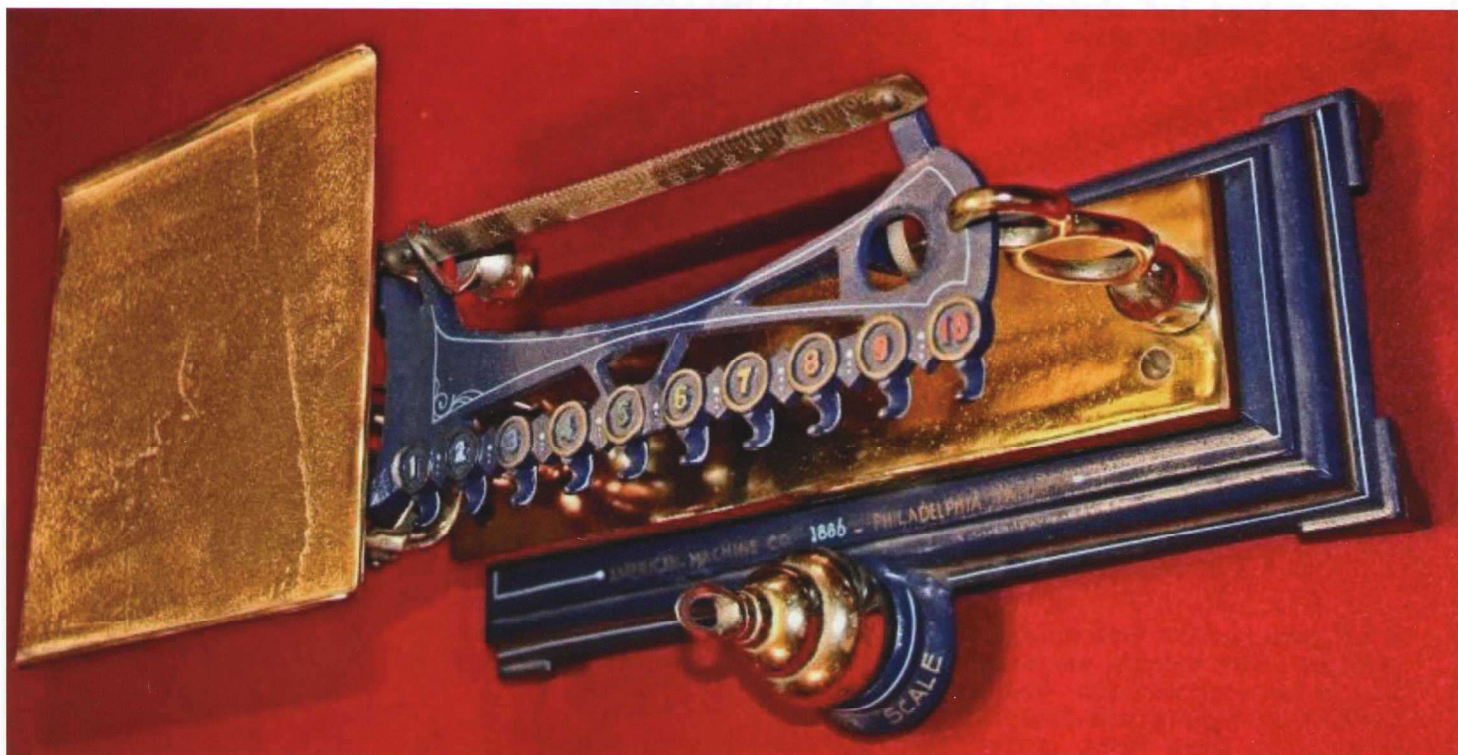


Figure 11. ^^ This scale's beam and poise were invented by John Franklin Lawrence and the scale was manufactured by Southwark Scale Co. in the early 1900s.

The patent from December 24, 1901 is shown in figure 12. It should be noted that only the beam and poise design are included in the patent. The inventor was John F. Lawrence. There were some differences between the patent and production scale. In the patent, the beam was designed such that the first hook for the weight was offset so that it would not interfere with knife edges on the scale. The design of the beam was changed in the production scale by simply changing the weight distribution on the beam. In addition, the final capacity was reduced to 10 pounds with smaller capacities on the front beam and 16 ounces on the back beam for a total of 13 pounds although they produced scales in many different sizes.

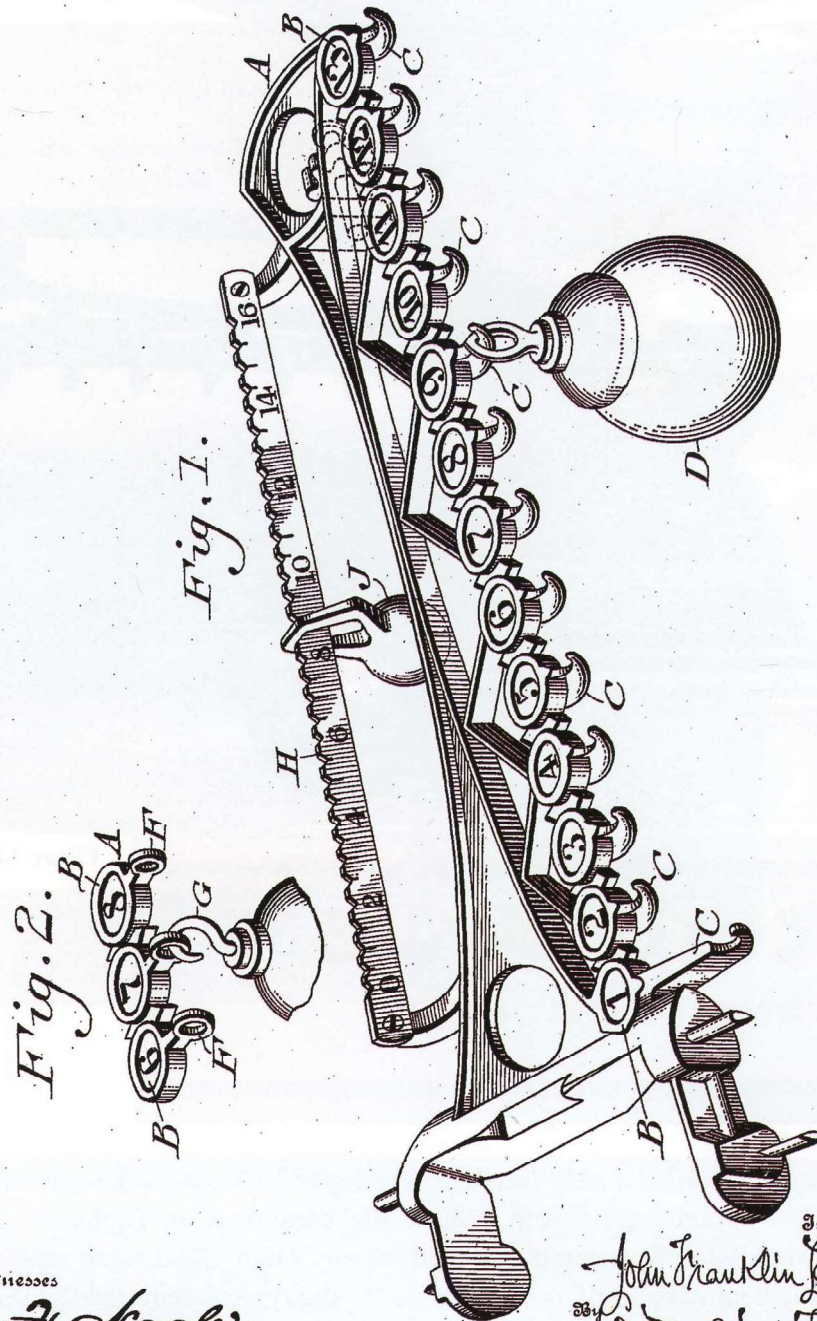
No. 689,810.

J. F. LAWRENCE.
SCALE.

Patented Dec. 24, 1901.

(Application filed May 14, 1901.)

(No Model.)



Witnesses
P. J. Nagle.
L. Bouville.

Inventor
John Franklin Lawrence
Gledersheim + DeBault
Attorneys

Figure 12. Patent number 689,810 was issued on Dec. 24, 1901 to John Franklin Lawrence of Philadelphia, Pennsylvania, Assignor to G.W. & J.F. Lawrence, of Philadelphia, Pennsylvania, Trading as Southwark Scale Company.

About a year ago, another example of this scale was found as pictured in Figure 13. This scale has a H. TROEMNER decal (Figure 14) affixed to the base. It also has a PATENT PEND. 1893 on the decal. In addition, the decal did not look like any other Troemner name plates. I think it is “caveat emptor” for those of us who buy refurbished scales since the scale was not patented until 1901. Other than that, the scale is physically nearly the same as the previous scale.

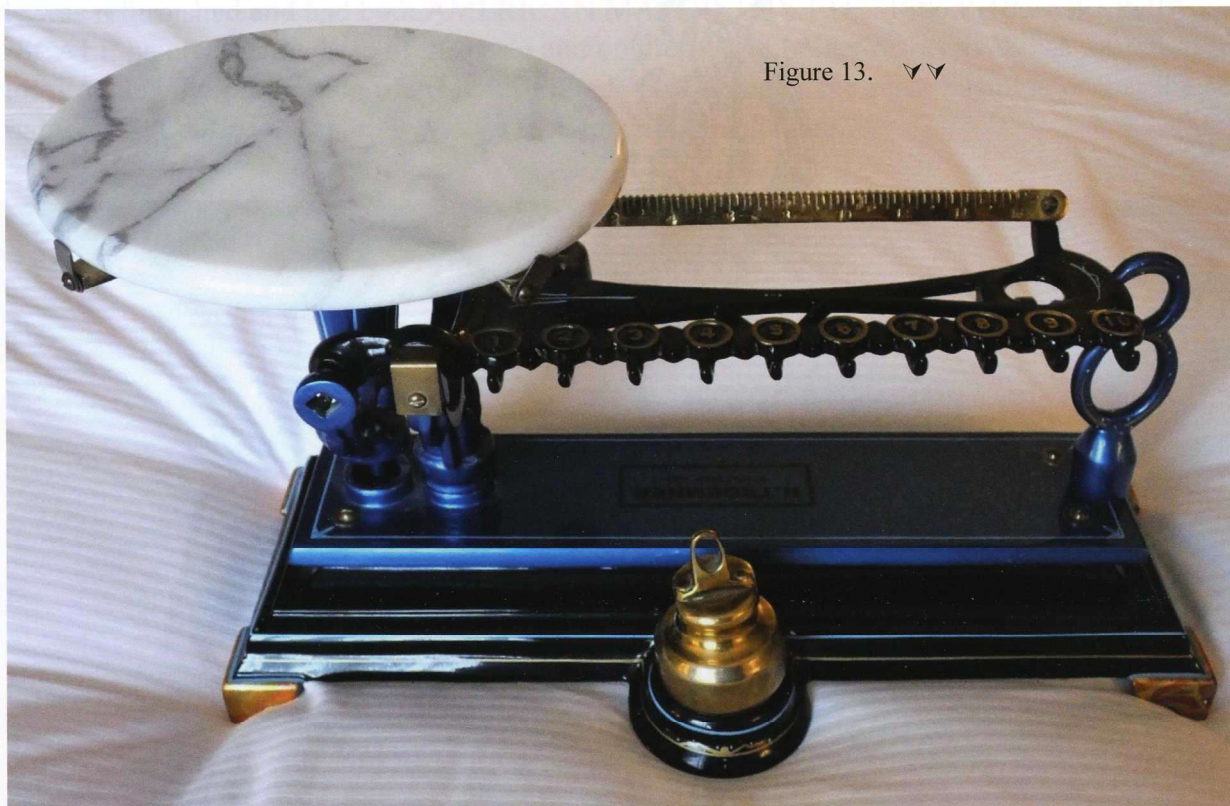


Figure 13. ♡♡



Figure 14. <<

The scale shown in figures 15 and 16 is a very rare 6 pound capacity Southwark scale that is a version of the December 24, 1901 patent. Moreover, if you look at the nameplate in figure 17, the scale is named “PERFECT WEIGHING MACHINE”, a name not seen on any other Southwark scale. The most striking feature of the scale is that the beam assembly is very similar to the typical centipede scale produced by Southwark. However, the base looks very much like the base of a Troemner ball scale of the same era. The beam and base posts of a Troemner ball scale are pictured in figure 18. No records were found of any contracts or agreements allowing Southwark to use Troemner’s designs. If other of Southwark scales are closely examined, there are additional similarities to Troemner’s scales in the beam shapes, beams arresters and other features. In the case of this scale, it is possible that Southwark purchased the bases from Troemner on a one off basis or adhoc agreement.

Figure 15. >> A small 6 pound capacity Southwark scale with a Troemner style base. This scale is missing its hanging poise.

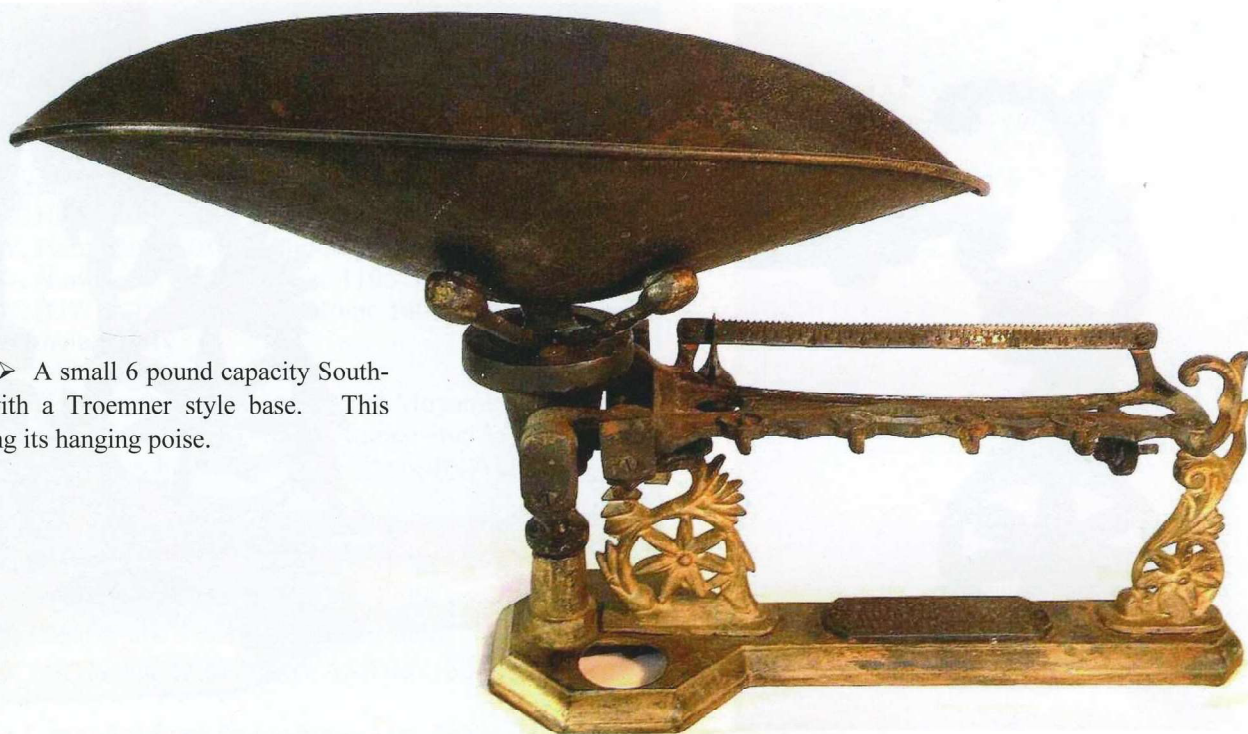


Figure 16. << Top view of the scale in figure 15 showing the beam design.

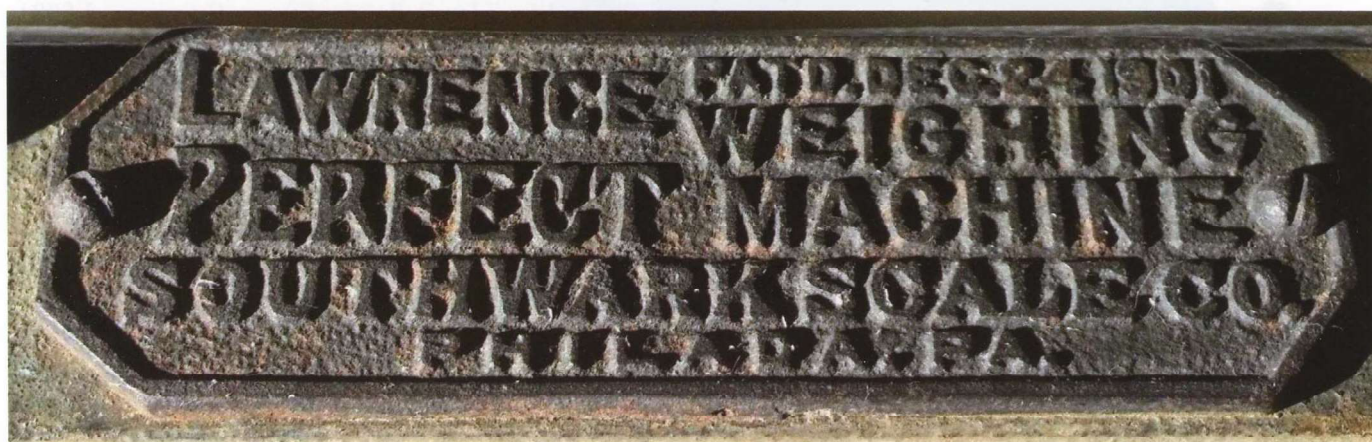
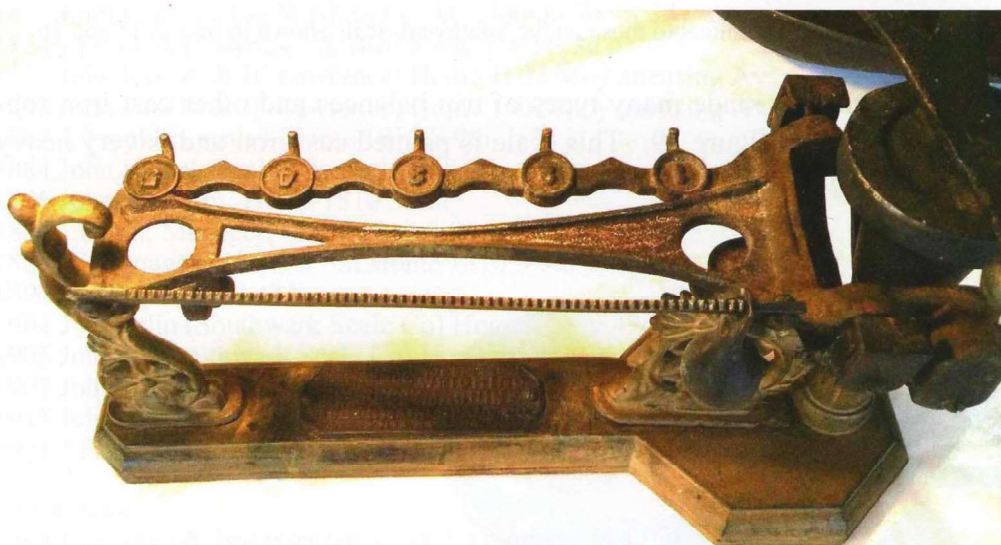


Figure 17. ^^ The cast label from the base of the scale shown in figures 15 & 16.

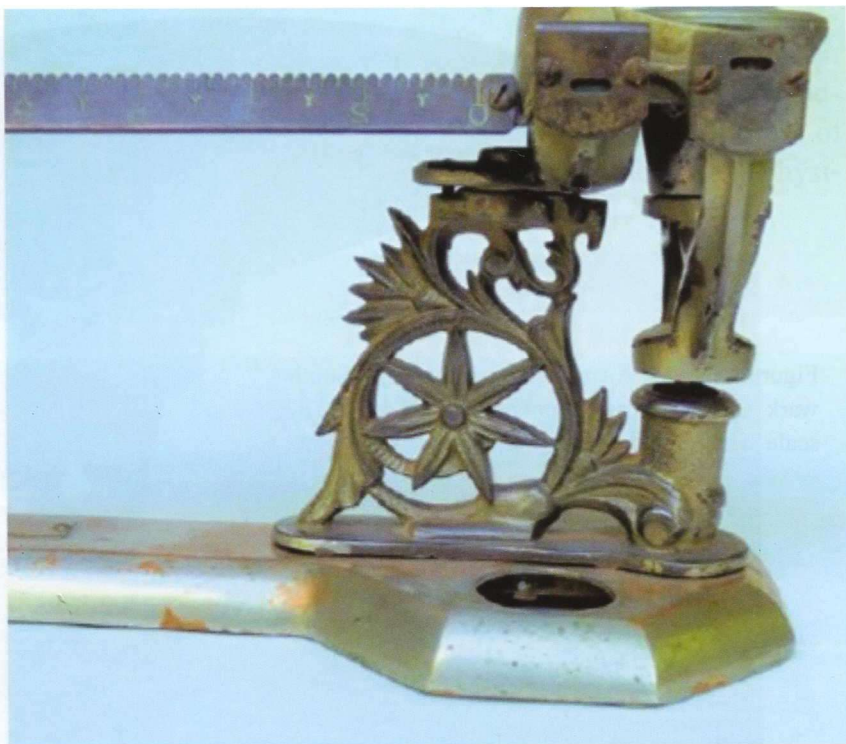


Figure 18. ▲➤ The base of a Troemner Ball scale is identical to those on the Southwark scale shown in figures 15 and 16.

As was typical with iron foundries, Southwark made many types of trip balances and other cast iron observational models with an example shown below in figure 19. This scale is painted cast iron and is very heavy with a 16 oz beam and two one pound weights and is labeled as made in Camden, New Jersey.

Figure 19. ▼▼



Acknowledgements:

A very special thanks goes to Jan Berning. Without her help I would not have been able to complete this article. Additional thanks go to James Reeve and Larry Press.

Southwark Scale Co. Timeline

Taken from Philadelphia City Directories 1870-1904 and Camden, N.J. City Directories 1905-1921.

George W Lawrence born Philadelphia 1847

1870 George W, Hardware, 1101 s 2d Home 1502 Jefferson Av
1873 George W, Hardware 1101 S 2d home 131 N 13th
1874 George W. (Lawrence & Bro) Home 1105 S 2d
1877 George W, (GW & JF Lawrence), Home 1405 Moyamensing Av
1878 1405 Moyamensing Av
1883 GW Home 1405 Moyamensing Av
1884 George W. (Lawrence Bros), Home 1405 Moyamensing Av
1886 George W, Manager, Home 1405 Moyamensing Av
1887 George W, scalemkr, home 1405 Moyamensing Av
1896 GW home 4318 Pine St
1904 George W (Southwark Scale Co) Home 504 S 44th
1905 George W (Southwark Scale Co) Home Phila
1907 George W (Southwark Scale Co) Home Phila
1915 George W (Southwark Scale Co) Home Phila
1921 George W (est) NW c 2d & Pine (CAMDEN, NJ city Directory)

John Franklin Lawrence born Philadelphia May 1852

1873 John F, clerk, 146 Washington Av, Home 1502 S 3d
1874 J Franklin (Lawrence & Bro) home 1502 S 3d
1877 John F (GW & JF Lawrence) Home 1502 Moyamensing Av
1878 John F (GW & JF Lawrence) Home 1502 Moyamensing Av
1883 J. Franklin, scales, Home 1810 S 9th
1884 John F, scalesmakr, Home 1810 S 9th
1886 John F, Scales, Home 1810 S 9th
1887 J Frank, Manager, Home 1810 S 9th
1888 JF Manager 1101 S 2nd St Home 1810 S 9th
1896 JF Home 723 N 43d
1904 J Franklin (Southwark Scale Co) Home 723 N 43d
1905 John F, (Southwark Scale Co) Home Phila
1907 John F, (Southwark Scale Co) Home Phila
1915 John F, (Southwark Scale Co) Home Millbourne, PA
1921 J Franklin Home 5529 Hazel Ave

Businesses

1874 Lawrence & Bro.(George W. & J. Franklin), Hardware, 1101 S 2d
1877 Lawrence, GW & JF(George W & John F), Hardware, 1101 S 2d
1878 Lawrence, GW & JF Lawrence (George W & John F), hardware, s 2d C Wash'n Av & 205 Arch
1883 Lawrence Bros., (George & Frank), scales, 127 Wash'n Av
1884 Lawrence Bros (George W & Frank), scales, 127 Wash'n Av
1886 Southwark Scale Co, 51 N 2d
1887 Southwark Scale Co, 51 N 2d
1896 G.W. & JF (Geo W. & J. Franklin), scales, 415 s 2d
1904 415 S 2d
1905 Southwark Scale Co, 2d cor Pine
1907 Southwark Scale Co (George W and John F Lawrence) 2d cor Pine
1915 Southwark Scale Co, NW cor 2d and Pine
1920 Southwark Scale Co, NW c 2d & Pine
1921 Southwark Scale Co, NW c 2d & Pine

The Ainsworth Analytical Balance Type BB, No. 32671 With Chain Weighing Device

BY LUDWIG BOSCH

Editor's Note: *This article first appeared in the September 2017 issue of Mass & Gewicht in its original German with this translation by Thomas Allgeier.*

William Ainsworth, a clockmaker who had emigrated from England, was exposed to precision balances for the first time during the “gold rush” around 1880 in Colorado (USA). The balances used at that time were imported from Europe and had to be sent back there for any repairs, at great expense especially in time.

In 1882 William Ainsworth founded his business for manufacturing clocks and balances. The American firm was taken over in 2013 by Sartorius of Göttingen.

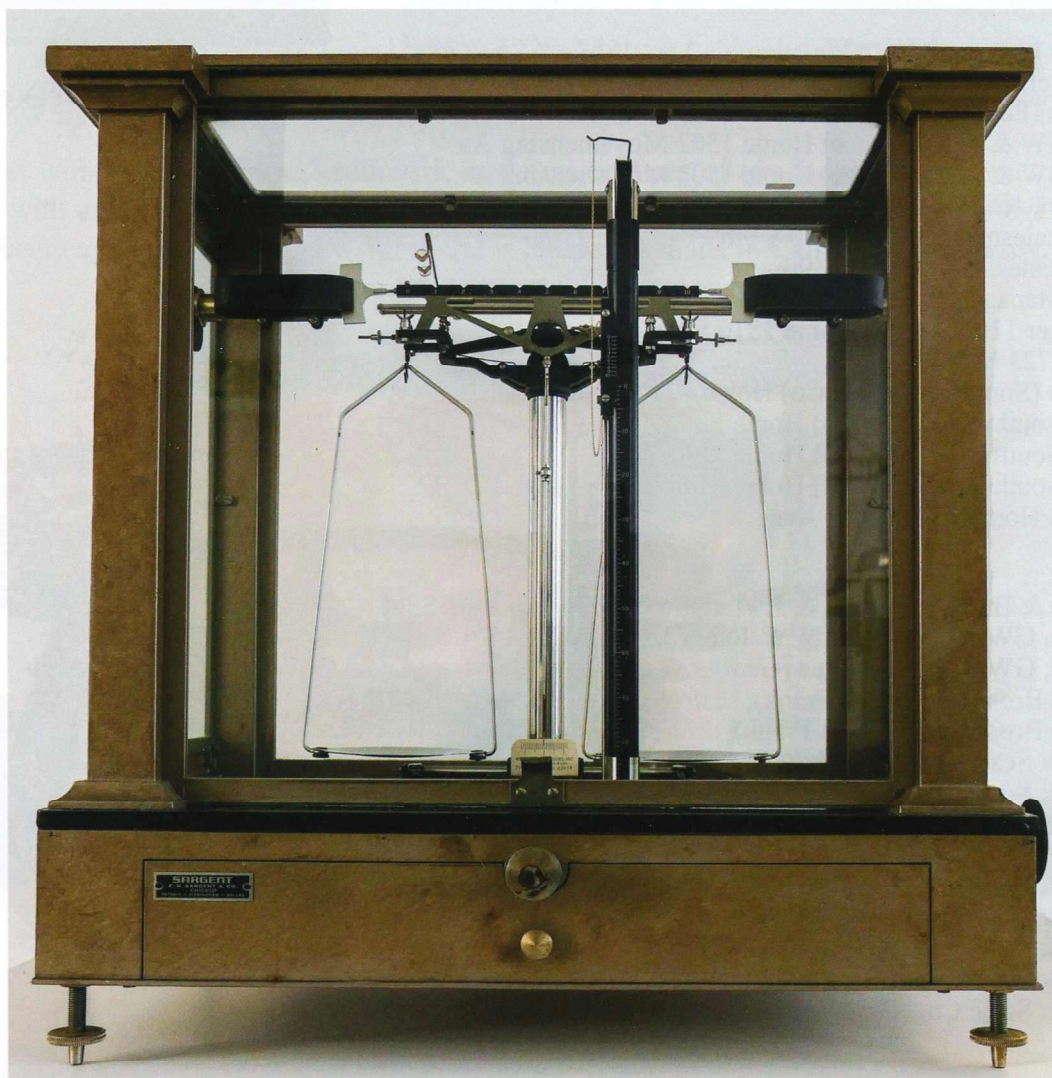


Figure 1. ▲▲ Frontal view of the analytical balance.



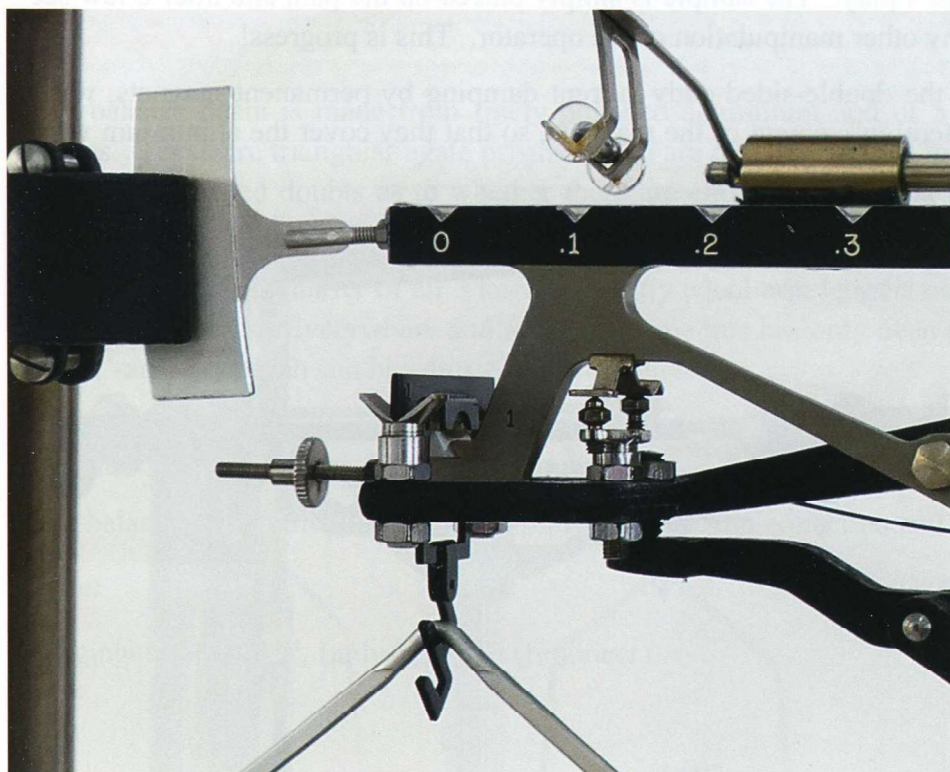
Figure 2. ▲▲ Chart with maker's plate.

The "House of the 1000 Balances" in Albstadt-Onstmettingen has a balance of the type BB (Fig. 1) which carries the serial number 32671, (Fig. 2). The design is covered by the US patent nos. 2,022,306 and 2,111,842, (Fig. 3).



Figure 3. ▲▲ The patent numbers on the balance date from 1935 and 1938.

The equal-arm analytical balance with an aluminium beam and a nickel-plated brass pillar is mounted in a glazed wooden case which has a counter balanced front door made from metal and glass. The rear door, also from metal and glass, simplifies the assembly. The balance is mounted on a black glass base which rests on a lower metal box (with drawer) and 4 adjustable feet. Case and lower box are finished in "Hammerite".



The weighing range stretches from 0.1 mg to 200 g. The whole grams are balanced by loose weights from a set. For the first decimal place the beam has been graduated with 11 notches on its upper side which are marked 0 – 0.1 – 0.2 ... 0.9 – 1 g. A 0.5 g cylindrical weight can be placed in these notches with a rider movement (Fig. 4).

Figure 4. ◀◀ Rider movement.

The 10 mg and 1 mg divisions are measured with a chain weight device. This design, less often used in Europe, consists of a fine chain and a vertically moveable slide which operates a belt graduated from 0 – 100 mg. By means of a 10-division Vernier, the 0.1 mg can also be determined. The chain is linked to the beam with a cone bearing, thus giving a degree of rotational freedom and low friction. The other end of the chain is connected to a graduated vertical chain lift, which in turn is operated by a knob on the right side of the case. Thereby, more or less chain links act on the right side of the balance beam until equilibrium has been reached (Fig. 5).

Example of weighing 123.4567 g

123 g are added in loose weights from a weight set. The 0.4 g are balanced by moving the rider weight into the 0.4 notch on the beam. The next two decimal places (0.056 g = 56 mg) are measured with the chain weight device. By using the Vernier, this also permits reading the last decimal, to one tenth of a milligram, in this case the number 7.

It will be seen that the determination of a weight to 7 significant digits would have taken some time in this way. At the end of the process, one even had to add up all these digits correctly. Compared to this, weighing on a modern electronic balance is child's play. The sample is simply placed on the pan, and after a few seconds the result is displayed, without any other manipulation of the operator. This is progress!

A further particular design feature is the double-sided eddy-current damping by permanent magnets, which even achieves variable damping by lateral movement of the magnets, so that they cover the aluminium vanes more or less. The latter are fitted to the left and right side of the weighing beam (Fig. 6).

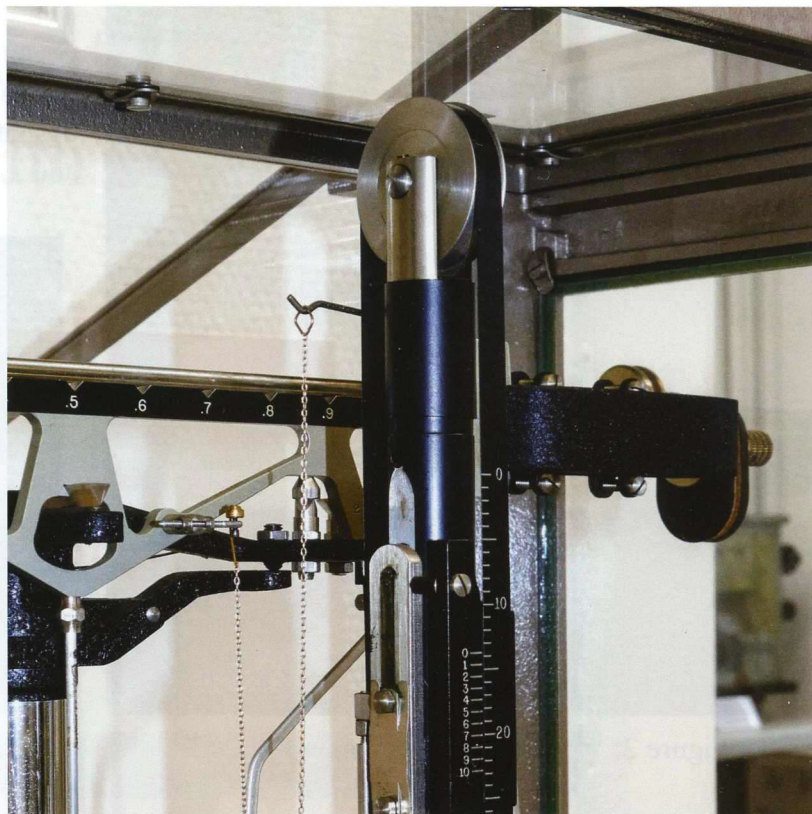


Figure 5. ▲▲ Chain device

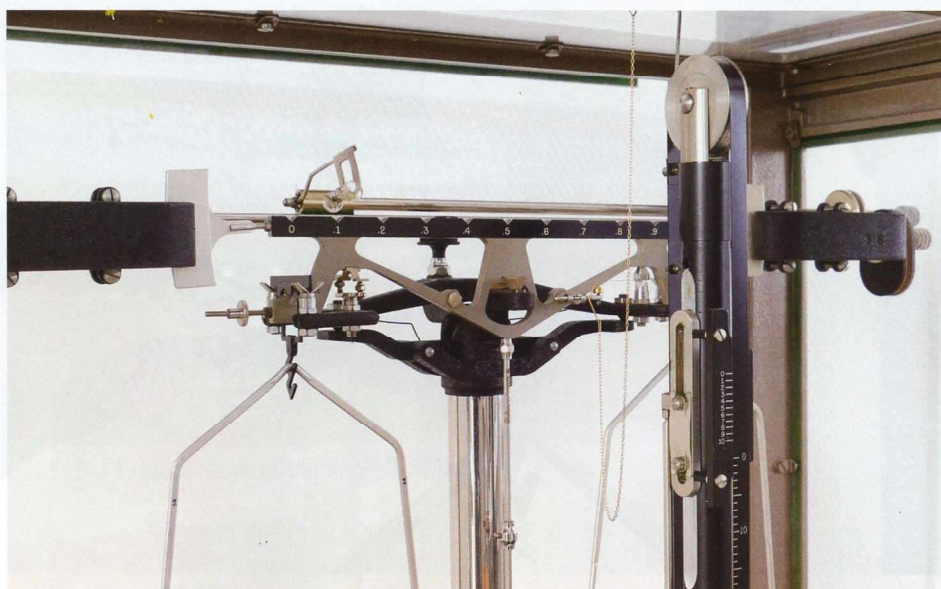
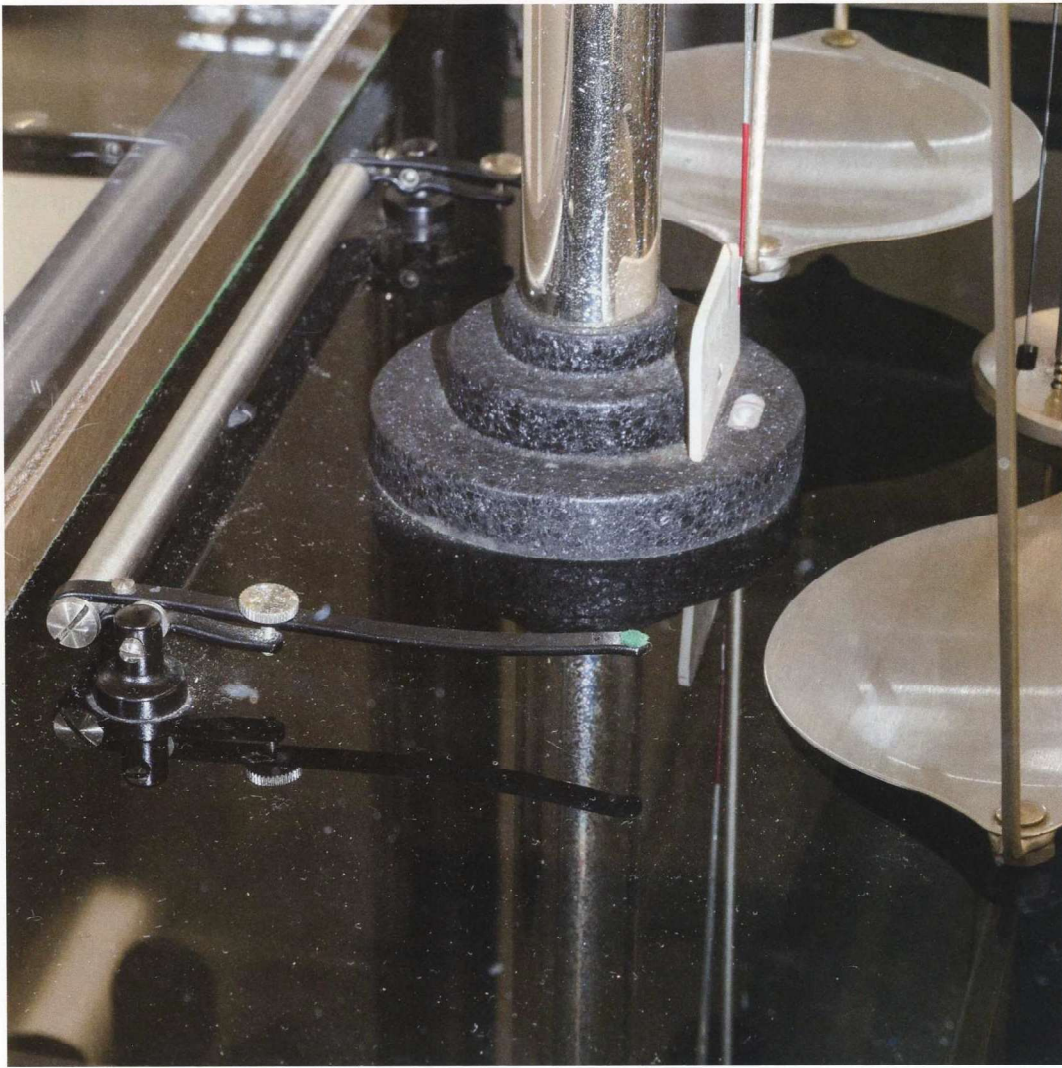


Figure 6. ➤➤ Magnetic damping.



The pan brake is also of a noteworthy design. It is activated through the arrestment mechanism and functions as a see-saw with adjustable leaf springs, fitted into the rear part of the weighing chamber (Fig. 7).

Figure 7. ▲▲ Pan brake.

The balance beam is made from finely polished aluminium and of 5 inch (127 mm) length between end knives. These are triangular agate prisms which are directly pressed into the beam without any knife boxes. There are justified doubts as to whether there are enough adjustment possibilities to satisfy the three most important rules of adjustment:

These are the co-planarity of all 3 knives, exactly equal arm lengths on both sides and complete parallelism of the knife edges. Everywhere and for a long time this has only been possible by having the knives mounted in “saddles” which can be adjusted in every direction.

The balance beam is fixed with circular arrestment with 3-point bearings. The stirrups have plain agate bearings and 2-point bearings for their arrestment.

The balance at Onstmettingen comes from the Jenemann collection and is in particularly good condition.

Note:

Jungingen, July 2017, Ludwig Bosch (Engineer).

Prune Testing

BY UTZ SCHMIDT

Another accidental discovery of a strange scale was made by Shirley, thumbing through the *Dictionary of American Hand Tools*¹. To catalog the archived treasures in our local museum often requires definition of their usage. Totally immersed in writing my book, the words *You have to see this* interrupted my train of

thought. The following word “prune” made my ears perk up. Immediately I envisioned my mother’s *Plum Cake with Streusel*. (Figure 1) With added whipped cream, it is my favorite dish. So, I rushed mouthwatering to the scene to be surprised by Shirley’s find, a picture with the description of a “Prune Tester”. (Figures 2 & 3¹) I had to admit that this was a new application for me; a novel idea. But why not, scales were developed for all kinds of special purposes.



Figure 1. <<

Figure 2. >>

PRUNE TESTER. A scale used to weigh a fixed volume of prunes. The weight is used as a measure of moisture content. The same device with a different scale is used in the wheat belt to measure grain. Several sizes of containers were available.

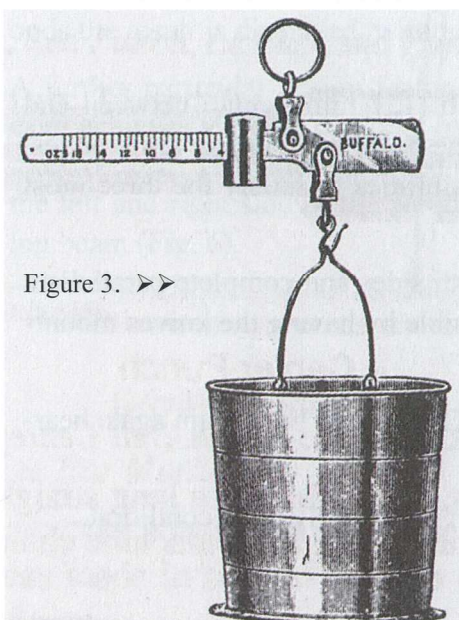


Figure 3. >>

Prune Tester

The function of a grain tester is very similar, used to define the weight of a fixed volume of grain. After balancing with the slider, the reading allows one to determine the quality as well as moisture and with the help of a chart, the base for a fair price. The bucket is quite large in comparison to the grain kernels and in some cases, there are special features to allow repeatable packaging of the kernels.

“Prunes” are defined as dried plums, but the name is also used for a distinct type of plum. Right or wrong, I tended more to the first definition, eliminating the use for the freshly picked fruit. The next question is obvious, are the pits removed or not? Removing them would have been, to say the least difficult and labor intensive. So, the pits stay. (Figure 4)

After defining the product, it became important to find the market and demand. The nutritional value is tremendous, as well the use as a home remedy for weight loss, blood sugar and not to forget the aid for digestion and bowel movement. The rumor is, three prunes a day keep doctors away. Just as a teaser, ice cream with plumb jam, the one from Saxony, is another of my favorites.



Figure 4. ▼▼

Industrial production of dried plums in California started between 1870 and 1890, when a glut of principal fruits like apples and pears inspired growers to find profitable alternatives. Noting the mounting imports of dried plums from Europe—which reached as high as 22,000 tons at one point during the 1870s—savvy growers followed the market and shifted their plantings to plums. The transcontinental railroad increased the market for dried plums across the nation and in time California's crop which reached a high of 46,000 tons in 1887¹, displaced imports.

The bountiful [Santa Clara] Valley environment and pioneering horticulturists like Luther Burbank helped support the tremendous growth of the dried plum industry. As the California dried plum acreage grew, so did the number of processing plants, as such facilities had to be within a horse-and-wagon haul of growers. By 1900, an estimated 85 dried plum packing plants had taken root throughout the growing area².

Labor costs put a pinch on the industry, too, and in 1905, one grower thought he had the answer to rising worker wages: He brought 500 monkeys to the Santa Clara Valley from Panama to pick prune plums. Organized into crews of 50 with a human foreman overseeing each, the monkeys hit the fields and scampered up the trees to their pickings. But, while they proved reliable at harvesting the fruit, they could be equally counted on to gobble up every prune plum they picked.²

Drying the plums is really an easy way to preserve without a loss of vitamins and other helpful ingredients. Consistent quality became an issue. Unwilling to watch their reputations erode, concerned parties organized the Dried Fruit Association of California (now the DFA of California) in 1908 to oversee sales contracts, transportation, pure food laws and legislation. The DFA even eventually established an independent inspection service to certify the condition of dried fruit on the dock before shipment.² In this struggle the prune sale was born, with the government on its heels to get a share of the pie or rather plum cake. In 1885, Minnesota was the only state which had already specified the bushel weight for dried plums³ at 28 pounds. In 2001, this was still the standard in Michigan, compared to a Bushel Weight⁴ of fresh plums with 64 pounds in 1925.

The last open issue is the use of the scale. Without any other information, i.e. of a chart or proof, I have to admit, that I can only guess, "but wouldn't allow the reader to do the same." Because then we would be back at the same point, when Harley Crawford desperately tried to find the function of this scale and to Bob's guess of a chickpea scale. No way, Jose! It is a Prune Tester!

Contacting Bob Jibben, I got a wealth of information and pictures on his two prune testers and descriptions of scales. The Howe scale has the collapsible bucket, like the Buffalo (Figure 3) shown in your picture. So, the same company may have made them and then the companies purchased them for their scale. The beams of the Buffalo and Howe look the same also. There is no name on the Howe bucket that I have, and the dimensions are: bucket open 4.25 inches, bucket collapsed 1.25 inches, bucket top diameter 5 inches, bucket base 4.5 inches, and the beam is 8.5 inches. It weighs 16 ounces in 8 ounce increments. The poise has a screw stop on the bottom to set the poise so it will not move.

The Fairbanks Scale comes in a brass box 8 inches long, 3 inches wide and 1 inch deep. The top folds up and a hanger is attached to each end. The sides have little clips and the ends slide in to stabilize the box, which becomes the bucket for the scale when open, see picture. The beam is 7.75 inches long and has 16 ounces in 8 ounce increments the same as the Howe. It would be easy to be carried around when in the box - 1 cubic inch = 0.034632 US pint⁵. With some imagination, the Fairbanks beam end resembles a plum.

The relation of the bucket, about a pint size, to the size of a prune, considering the possible stickiness and coarse surface, make an equal filling operation quite difficult to impossible. The conical shape of the Howe bucket eases at least the removal; one good thing. To prove the function of the testers, Bob was so kind to buy a bunch of dried plumbs to do some testing for me.

Scale Manufacturer	Bucket Volume (Quart)	Dried Plum Bushel Weight (lbs.)
Howe	1.2	51.7
Fairbanks	0.9	55.4
Standard dried Plum		28
Standard Fresh Plum		64

Remembering back to the 1940s, when we dried our own plums, they were a lot smaller, dryer and not sticky at all, compared to those in a “Sunsweet” package. This might partially explain the difference in bushel weight, measured with the totally different designs of buckets. Therefore, I stick to my theory, having solved the purpose of these mystery scales.

As scales developed over the years and higher accuracy was needed, here is a modern Mettler Toledo from 2013 – *When Moisture Matters*. It is widely used by the dried food industry. (Figure 5)

The actual pictures are used in the following article from Don Schoenly, as he sheds more light on the subject.

Notes & References:

1. Alvin Sellens, *Dictionary of American Hand Tools: A Pictorial Synopsis*, Schiffer Publication Ltd., 2002, pg. 371.
2. California Dried Plumb History, <http://www.californiadriedplums.org/about-prunes-and-dried-plums/history>
3. Legal Weight of a Bushel in all States, *Peale's Popular Educator* 1885, pg.60
4. *Standard of Weights Act of Assembly* No 186, 1925, pg.166
5. Scale descriptions from Bob Jibben



Figure 5. ▲▲

The Mystery Scale Revisited

BY DON SCHOENLY

Editor's Note; *We are publishing two articles on these scales. The reason is that the two authors were working on articles not knowing the other was doing so. They came at the subject from very different perspectives. I hope you enjoy them and that they add to your knowledge.*

In the 2001 *Equilibrium*, issue No. 2 on page 2582 to page 2584, George Anna Wehman wrote an interesting article that she titled *Mystery Scale*. She wrote about two different scales, one made by Fairbanks and the other by Howe. (Figure 1) The scales seem very similar in terms of the beams and size. Both weighing up to 16 oz. Both seem portable. George Anna queried several ISASC members and the curator of the Fairbanks museum. No one was able to tell her what exactly these scales were used for or their approximate age. Some new information has come to light that moves us closer to answering both questions.

Figure 1a. ▼▼ Fairbanks Scale.

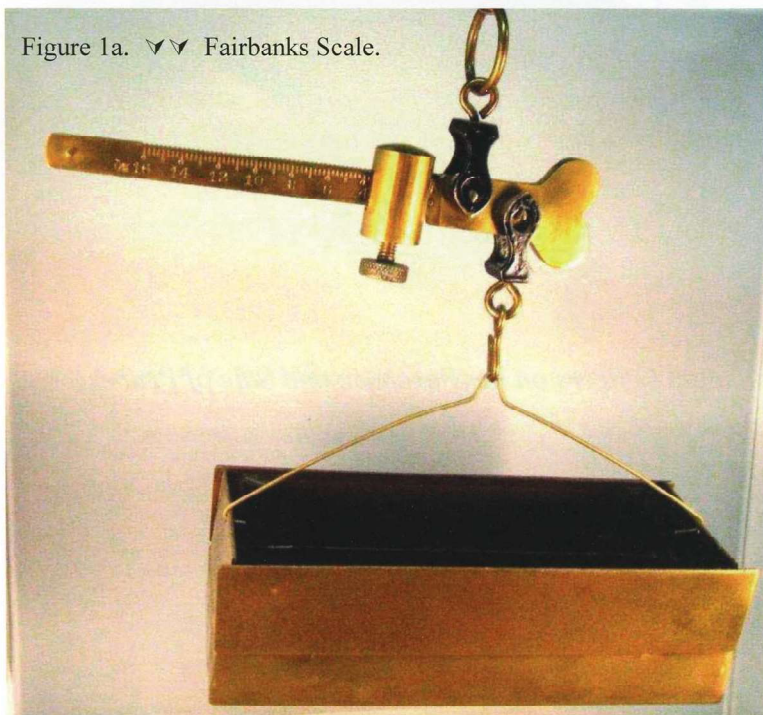
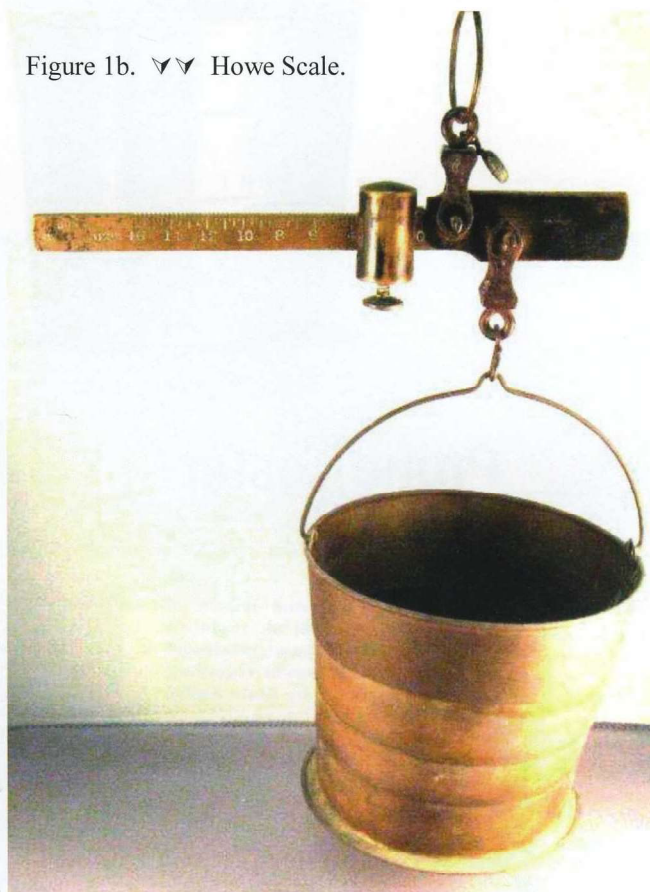
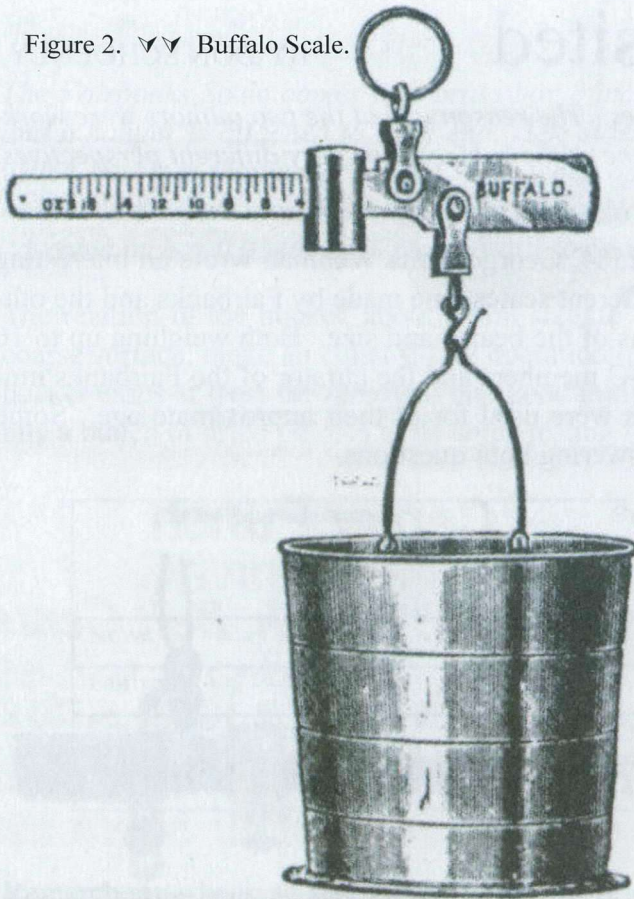


Figure 1b. ▼▼ Howe Scale.



Shirley and Utz Schmidt, ISASC members, found a reference in the *Dictionary of American Hand Tools*, Published by Schiffer Publishing. The reference shows a picture (Figure 2) of what looks like the Howe scale that George Anna shows in her article, and calls the scale a “Prune Tester”. This scale has Buffalo stamped on the beam. One small difference in the Buffalo scale is that the beam weights up to 18 oz. (figure 3) So now we have three makers of this type of scale. The description says *Prune Tester, a scale used to weigh a fixed volume of prunes. The weight is used as a measure of moisture content. The same device with a different scale is used in the wheat belt to measure grain. Several sizes of containers were available.*

Figure 2. ▽▽ Buffalo Scale.



Prune Tester

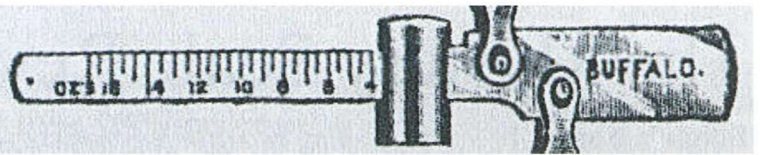


Figure 3. ▲▲ Buffalo illustration beam shows 18 ozs.

Chuck Leib, a friend of the author, found another reference in *The California Fruit News*, December 8, 1915". (Figure 4) This is titled *Instructions to State Measure and Weight Officers on the Purchase and Sale of Prunes*. These instructions talk about how to weigh prunes and how to calculate the value. The instructions reference a "Prune Scale" with a bucket to be used to weigh prunes. It talks about 80 prunes per pound being the standard and if it required more than 80 prunes to equal a pound the rate would be reduced by \$1 per ton. For each prune less than 80 to make a pound the rate would be advanced by \$1 per ton.

Figure 4. ▽▽ *Instructions to State Measure and Weight Officers on the Purchase and Sale of Prunes*

The prune growers and buyers of Sonoma county, as well as those all over the State, will be much interested in the official announcement regarding the weighing of prunes by State Sealer Charles Johnson.

County Sealer John L. Gist has received his instructions in the following letter from the State Sealer, and it should be read:

To All Weights and Measures Officials of the State of California:

Gentlemen:—The State of California is the greatest prune-producing State in the Union. One county alone has a normal crop in excess of 120,000,000 pounds.

Prunes are sold and purchased by avoirdupois weight, and the price of the product is determined by its grade as to size. Eighty prunes to the pound is the adopted common standard, and the price is established on this basis. When the prune is of a smaller size and it shall require more than eighty to weigh one pound, the price is reduced at the rate of one dollar per ton, and when the prune is larger and it shall require less than eighty to make a pound, the price is advanced one point, or one dollar per ton for each prune less than eighty.

To clearly illustrate: If the standard price, at eighty prunes to the pound, is 3 cents, or \$60 per ton, each prune added will reduce the price one dollar per ton, and vice versa.

The following schedule is in common use to determine values by growers and packers, and is considered as perfect as can be arrived at:

110 prunes to pound,	2c.	per pound
100 prunes to pound,	2½c	per pound
90 prunes to pound,	3c	per pound
80 prunes to pound,	3½c	per pound
70 prunes to pound,	4c	per pound
60 prunes to pound,	4½c	per pound
50 prunes to pound,	5c	per pound
40 prunes to pound,	5½c	per pound

To determine the standard weight, tests are made from various lots, or sacks, and these tests are made by the employment of a weighing device. The average test is made by weighing one pound of prunes and then counting them, and thereby establishing the basis. The making of a test on a one-pound basis is the cause for a great deal of confusion, as often times one prune added will cause the beam to indicate overweight, while without it the beam will not indicate a full pound, and where one prune (in accordance with the schedule) represents a difference of one dollar per ton, an accurate test cannot be established. It is for this reason that I beg to recommend that in the future when prunes are tested, in order to determine the size, each individual test, be of an amount not less than three pounds to each draft or test, and as many drafts as shall be consistent and agreeable to the buyer and seller. The grower and seller shall act in perfect good faith in determining the test, and it shall be the privilege of the buyer to test any part of any sack or lot offered for sale.

All boxes, sacks, or other containers wherein prunes are packed shall indicate on the container the contents of same, as prescribed under the provisions of the net container act, and they shall indicate on the container in addition thereto, the size of the prune, in accordance with common custom. Prunes in possession of the grower prior to the same being sold shall be exempt from these provisions.

All weighing apparatus employed in testing prunes or determining their average weight shall be sealed to accuracy by the sealer and shall have a minimum capacity of three pounds and with maximum graduations of one ounce. When apparatus, commonly known as a "prune scale," is employed, and same is equipped with a bucket, the same shall be permanently attached to the beam and the suspension ring shall be attached by a chain not less than a distance of six inches

from the beam, or such distance as shall not permit any part of the hand, from which the apparatus is suspended, reaching the beam, and the tolerance prescribed for this type of apparatus shall be the same as the tolerance prescribed for "counter balances and scales."

Section 32 of Chapter 597 provides that "any commodity, produce, article, or thing, shall not be sold in a less quantity than the true net weight, or the true net measure thereof, or in a less quantity than the seller represents it to be or contain." A violation of which constitutes a misdemeanor.

The weights and measures officials are requested to transmit these recommendations to growers and packers, and buyers and sellers, of this commodity, in order that same may become effective. Very truly yours,

Chas. G. Johnson,
State Superintendent of Weights and Measures.

In the instructions, it mentions that testing only 1 pound has caused a great deal of confusion because at times 1 prune is either too heavy or too light to get an exact measure. It goes on to suggest that 3 pounds be used as the sample size in the future. Actually the suggestion of going to 3 pounds for the sample size became the rule within days of the suggestion.

Although these two references do not give us enough to be absolutely certain that these scales were made to weigh prunes, they do provide some strong evidence that: first these little scales were made to weigh prunes (The citation in the *Directory of American Hand Tools*) and, second they were used in and around 1915 (the date of the *California Fruit News*). Maybe the movement to 3 pound samples explains why it seems that not many of these scales survived i.e. not many were made. But both Howe and Fairbanks and now Buffalo believed there was a big enough market to make them in the first place. I also believe that it is very possible that these scales were used to weigh and measure other fruits and vegetables. It sure would be nice to find a catalogue from one of these manufacturers for positive identification.



Figures 5 & 6. ▲▼ Fairbanks prune scale.



Figures 8 & 9. ▲▼ Howe prune tester scale.



Figure 7. ▼▼ Fairbanks prune scale ready for transport.



Ashworth, Ross, Ashworth-Ross

BY JOHN KNIGHTS

I was very interested to see Mike Sharpe's article in issue 2017 No. 1 about the Ashworth Ross steelyard weighbridge at Maidstone. I always had a fascination with the Ashworth, Ross and Ashworth-Ross variations of heavy weighing machines as they offered a little colour in the great red canvass of Avery that otherwise occupied the landscape. Ashworth and Ashworth Ross weighbridges were also painted red actually, but you get the general idea.

There was obviously nothing wrong with the Avery offering. Their scales were for the most part very well designed and competently engineered. It was just that the Ashworth etc. machines had a pleasant quirkiness that lightened the day when you were turning up to test yet another weighbridge.

Once weighing moved beyond the use of simple steelyards, the mechanisms became subject to patent. This meant that, just as James Watt had to devise a ludicrously complicated planetary gear mechanism to replace the simple crank on his rotary engines, various, sometimes bizarre solutions had to be found to achieve an equivalent but non infringing device. In heavy weighing machines, this was particularly true of self-indicating headworks and capacity increasing mechanisms. The various makers were vigilant in the protection of their designs as illustrated by a 1914 case in the English Court of Chancery. The Avery Company alleged that Ashworth Son & Co. had infringed one of their patented designs for a mechanism connecting two weighbridge plates which could then weigh in combination. The defendants argued that the device was not suitably novel to be subject of a patent and then, just as in *Bleak House* by Dickens, the matter dragged on in Chancery for years, until everybody lost the will to live and only the lawyers got rich.

The Ashworth story began with the business of Ashworth Son and Co. established in the West Yorkshire town of Dewsbury, sometime in the 19th century.

Dewsbury is one of the many Yorkshire mill towns that relied upon the textile industry in the 19th and early 20th centuries and along with Batley and other adjacent towns, was part of the 'shoddy' belt. Shoddy was a textile derived largely from recycled wool cloth that was used to produce certain coarser products such as blankets and military uniforms. It was perceived in some quarters to be inferior to cloth produced from pristine fibre and thus gave rise to the use of the word as an adjective indicating poor manufacture.

Ashworth Son & Co was initially seen to be making heavy machinery such as industrial platform scales, live-stock weighing machines and pit bank equipment (Fig. 1 & 2). Pit bank machines were an essential feature of coal mining in which the miners' output had to be established so they could be paid on the basis of their production. Pit bank machines were comparatively simple, self indicating devices designed to ascertain the weight of loaded coal tubs as they emerged from the mine. Because the content of a tub was required to weigh a minimum amount, eg 5cwt, the machines had a simplified weighing arrangement which showed only a limited variation from that required

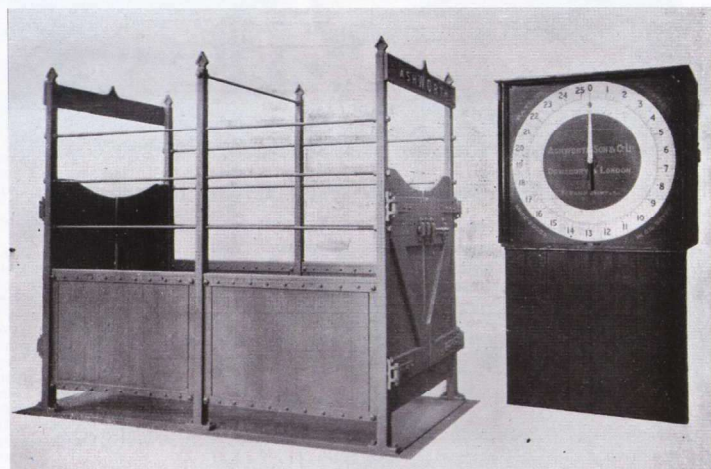


Fig. 1. ▲▲ Ashworth cattle weigher.

content. These 'piece work' devices were potentially a source of great friction between management and workers and their accuracy was examined minutely and incessantly.

I recall a bench platform machine, in use in the fish processing industry that I once tested when I was an inspector, and condemned because it had a significant 'slow' error. Slow errors were sometimes considered a benign condition in a retail machine as the buyer benefited at the cost of the seller. This was a 'piece work' machine however so the situation was otherwise. The workers' output was being underestimated! Thus, when the fish filleters of Grimsby, large gentlemen with excellent knife skills, considered that management were failing to act quickly enough, they took executive action by ripping the offending scale from its moorings and hurling it out of the factory.

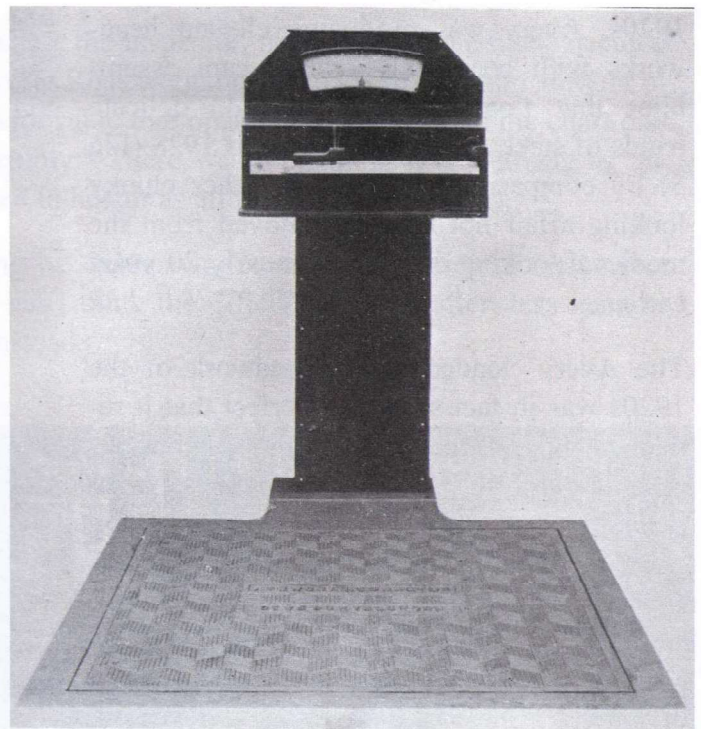


Figure 2. ▲▲ Ashworth pit bank.



Fig. 3. ▲▲ Ross pit bank.

The other party in the Ashworth etc. story was the company of Charles Ross Ltd. of Sheffield. Sheffield is a large city in Yorkshire that was founded on the production of steel and the products of steel. Coal mining was also a major industry in the area, so Ross, like Ashworth dealt in heavy equipment such as pit bank machines (Fig.3) and weighbridges. From the record of pattern approvals, we can see that Ross was an early designer of self indicating mechanisms for use in their heavy scales. A mechanism of 1910 (Fig 4), whose manufacturer was not identified at the time, appears to be by Ross, judging by its similarity to their pattern of 1928. It would seem however, that they were not so good at developing their designs. By the late

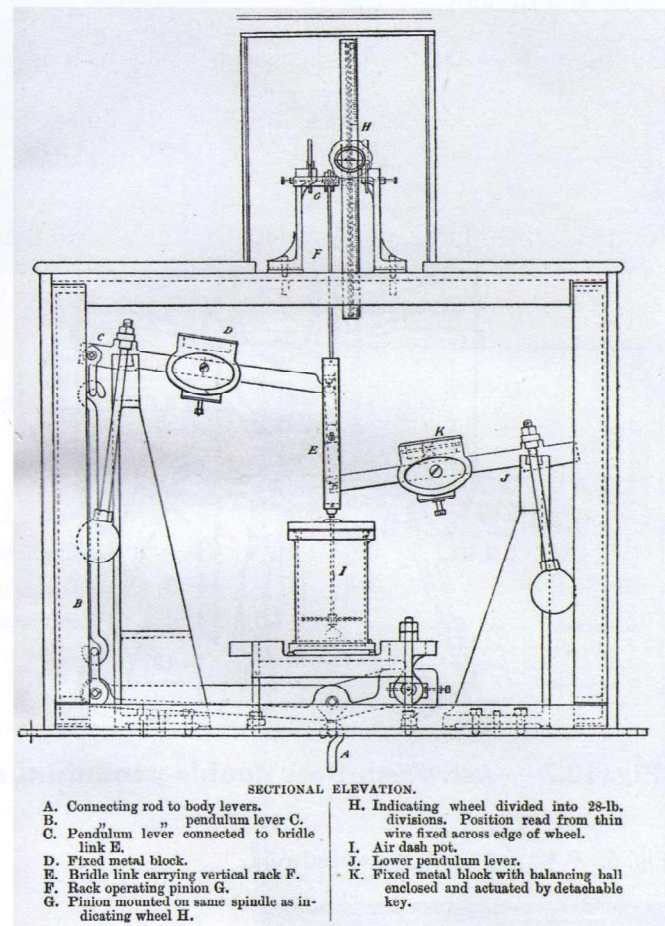


Fig. 4. ▲▲ Headwork 1910, possibly by Ross.

1920s, Avery was producing elegant headworks with beautifully crafted cam assemblies that floated and danced on delicate bands of steel. The Ross device of 1928 (Fig 5) by comparison was still a rather clunky looking affair not too far removed from the medieval looking machine of nearly 20 years earlier.

The Avery 'loaded lever' headwork of the 1920s was in fact so nearly perfect that it remained their standard device for weighbridges and platforms up until the 1960s, when pendulum headworks were replaced by cheaper spring resistant mechanisms. The Charles Ross device, unsurprisingly, proved somewhat less durable.

The headworks used by Ashworth Son & Co Ltd. in their earlier machines were also rudimentary and it was not until 1935 that Ashworth Ross & Co Ltd, as they had become, introduced a double pendulum resistant with cams and ribands.

By the mid-1930s, the businesses of Ashworth and Ross had merged to form Ashworth Ross & Co. Ltd. based at Scout Hill, Dewsbury. This company produced a whole range of weighing equipment but was known mainly for platform machines and weighbridges using a double pendulum resistant (Fig 6) which was similar to mechanisms used by companies such as Berkel, Toledo and Stathmos.

As weighbridge capacities got larger, load increasing mechanisms had to be incorporated in their designs. Avery, inevitably, produced a very elegant and efficient drop weight depositing mechanism which reset the dial each time its maximum value was reached. Other manufacturers had to devise different solutions which were inevitably more prosaic and clumsy.

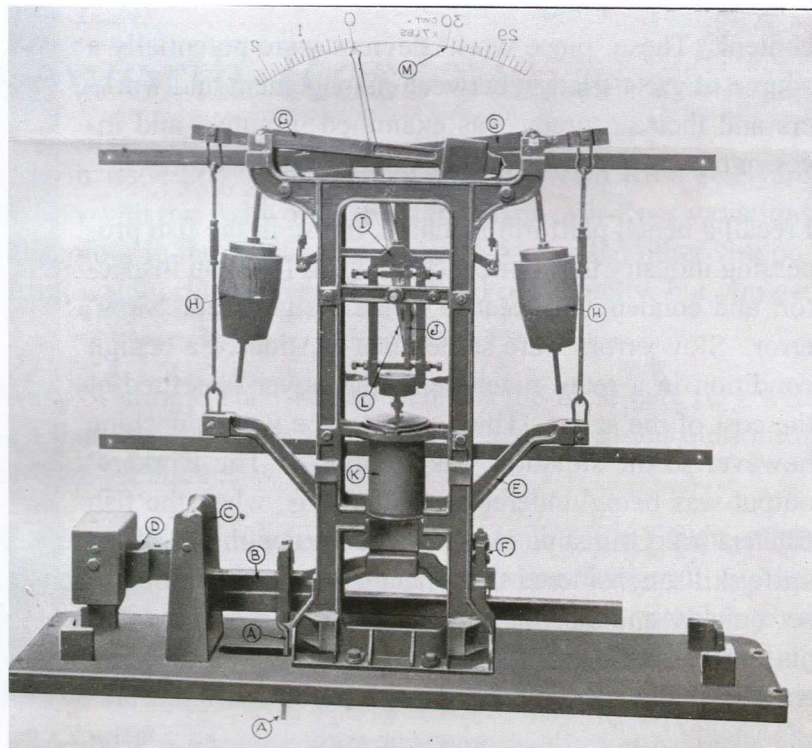


Fig. 5. ▲▲ Ross weighbridge.

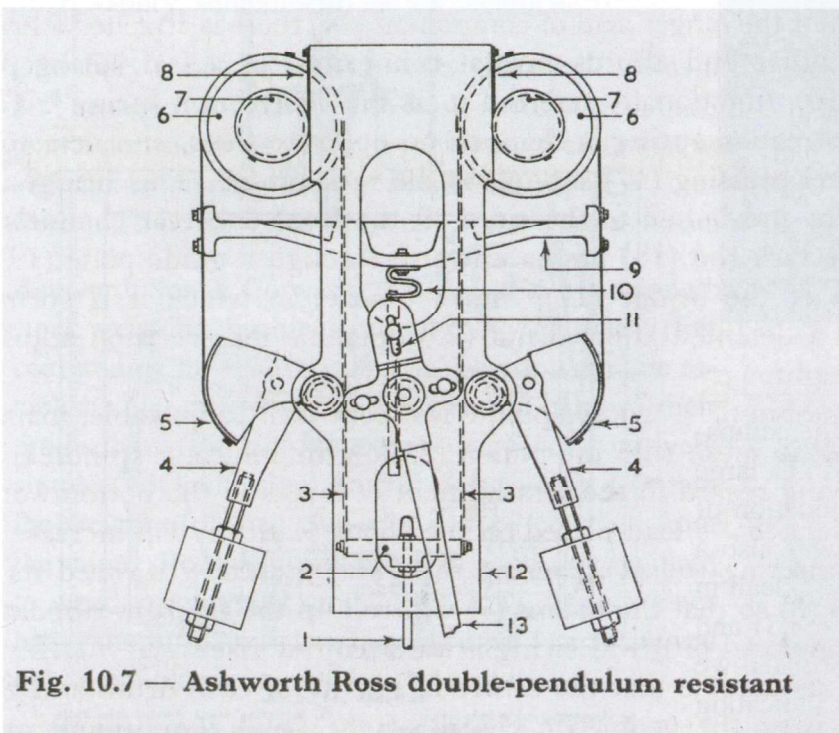


Fig. 10.7 — Ashworth Ross double-pendulum resistant

Fig. 6. ▲▲ Ashworth Ross headwork.

I recall being at a weighbridge test back in the 1960s, where the inspector, much against the rules, decided to perform a little tweak to the drop weights in an Ashworth Ross weighbridge. He did a certain amount of fiddling about and somehow managed to disconnect a wire cable that operated the rotation of the chart display that indicated the setting of the drop weight assembly. There was a clanking and whirring as the whole mechanism dramatically unwound and we watched in horror as all the settings were lost.

After a degree of panic and much further frantic fiddling we did manage to reset everything to the correct values. We even got the drop weight error corrected but I think the officer was thereafter, less keen to meddle and would tell the owner to call a scale maker instead.

About the time that Ashworth Ross was formed, another business E & A Ashworth Ltd. also began to operate in Dewsbury. This company was presumably another offshoot from the original Ashworth business and carried on in the weighbridge business well into the modern era.

They made machines that looked similar to the Ashworth-Ross versions which also used a double pendulum resistant (Fig. 7).

I don't know the story of how Ashworth Son & Co turned into the various successor businesses. It would be interesting to speculate on bitter sibling rivals battling it out in a small town which could be the stuff of soap opera and gritty northern drama. The truth is probably much less dramatic.

Ashworth-Ross went on to be a major player in the UK weighing machine industry and had branch offices in other towns and cities. Like many other companies, it was eventually absorbed into the all encompassing Avery organisation being kept as a separate division with the Ashworth-Ross identity being maintained.



Fig. 7. ▲▲ E & A Ashworth weighbridge.



Figures 8 & 9. ◀▶ Advertisements for the company.



From the Collection of

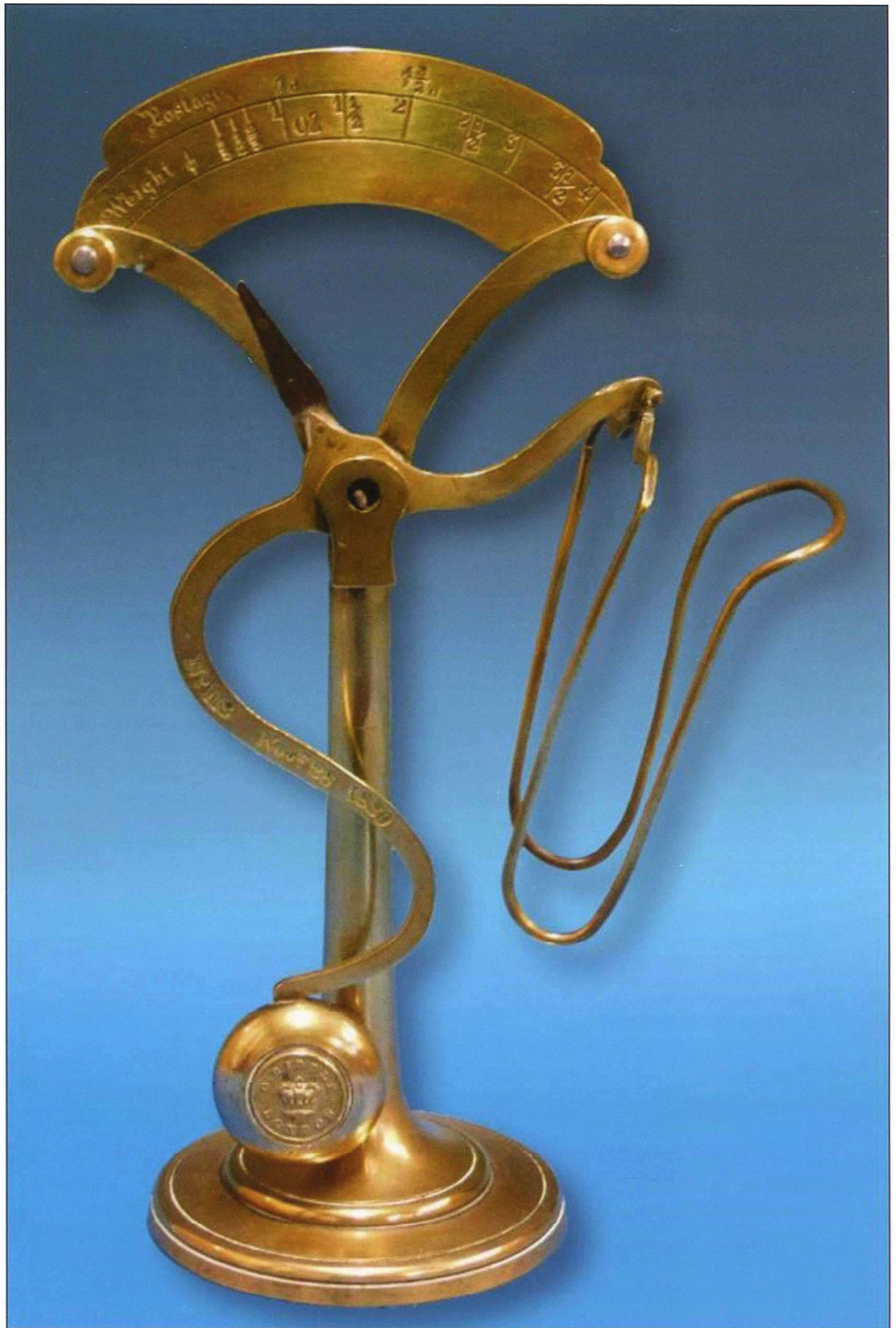
BOB & CAROL HAYDEN

This rather rare English pendulum postal scale reveals an interesting tidbit of history. Engraved on its S-shaped arm is "No. 113 Nov. 28, 1839" and on the poise is G. Riddle, London.

In England, the Design Registration system started in 1839, giving a short period of protection to the applicant who had an idea for something attractive or interesting, but not necessarily new. It gave 4 years of protection, whereas the much older Patent system gave protection for 7 or 10 years, and demanded proof the idea had not previously been used or shared.

Gabriel Riddle applied on November 28, 1839 for a Design Registration just after the system started; in fact he was the 113th person who applied.

The scale measures 8 inches tall, $3\frac{3}{4}$ inches across its fan shaped quadrant dial and its base measures $2\frac{7}{8}$ inches in diameter.





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Cover Picture

The Computing Scale Company of Dayton, Ohio manufactured the brass and cast iron, barrel type computing scale on our cover, circa 1893. The scale measures 27 inches tall and 31 inches wide. The cast iron base measures 11 inches in diameter and 22 inches long. The hanging plate is 15 inches in diameter. A brass plate affixed to the base of the scale has patent dates from 1885 to 1893. The plate is in front of three hanging poises. See page 4435 for more detail photos of this scale.

Jack Mickevich Collection.

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Brothers Reunited

BY BILL AND JAN BERNING WITH JAMES REEVE



Figure 1. ▲▲ This post card pictures the Chattanooga, Tennessee, Planters Peanut store with a Mr. Peanut scale on either side of its door.

Bill had wanted a Mr. Peanut Scale for several years and we found one up for auction through James Julia Auctions in May of 1993. The bidding was in house and by telephone and was very brisk, but we were the high bidders. In route to the 1993 ISASC convention in Baltimore, Maryland, we made a detour to pick-up our prize and Mr. Peanut was introduced to the attendees during Show and Tell later that month. (Figure 3) Since then, he has been a focal point in our home.



Figure 3. ▲▲ Introduction, by Bill Berning, of Mr. Peanut to attendees of the Baltimore, Maryland ISASC Convention in May 1993.

We first met ISASC member James Reeve at the young age of 12, when he was just beginning to collect scales. He visited in our home that year, with his grandfather who was a long-time scale collector, and saw our Mr. Peanut scale during that visit. Several years ago, he mentioned the one rare coin operated scale he would like to own was a Mr. Peanut.

On May 8th, of this year, James, now in his mid-twenties, joined several other ISASC convention attendees on a road trip to visit a Pennsylvania ISASC member to try to acquire this elusive scale. Negotiations began before, were held during the road trip and were continuing after the convention was over, but James went home to Iowa without his prize.

We discussed buying a Mr. Peanut scale shortly after our marriage in early November of 1991. These scales once stood in front of the Planter's Peanut stores around the country. (Figure 1) According to *The Billboard* magazine of July 1, 1950, National Peanut Corporation had recently contracted with Hamilton Scale Company to manufacture 50 advertising scales in the form of Mr. Peanut. (Figure 2)

Nat'l Peanut Corp. Contracts for New Hamilton Ad Scale

TOLEDO, June 24. — Hamilton Scale Company announced the addition of a new unit to its Advertising Scale line this week. Howard Ailor, president, stated the new model, called Mr. Peanut, was designed for the National Peanut Corporation, Wilkes-Barre, Pa., which contracted for 50 "peanut" scales.

As in other Hamilton advertising scales, which are exact reproductions of products or product packages such as soft drink bottles, milk cartons, tooth paste tubes, etc., the new model is in the form of the top-hatted, cane-bearing Mr. Peanut trade-mark. Dial and coin chute are positioned in the top of the hat.

Figure 2. ▲▲ *The Billboard* July 1, 1950.

On May 31, 2017, as we were perusing Ebay we found a Mr. Peanut Scale for sale (Figure 4) and sent a link for the auction to James, since we knew he was still interested in a good, original Mr. Peanut Scale. James wrote back “Thanks so much. I will definitely be watching and probably bidding. In your opinion, all is good with it? What about the lock?”



Figure 4. ▲▲ Four photos from the Ebay listing for the Mr. Peanut scale.



Figure 5. ▲▲ The serial number plate on the back of Mr. Peanut's hat.

Since we were aware that these scales had been reproduced, we wanted to learn more. On May 31, we wrote the seller, “Is there a serial number plate on the back of the hat? Is there a serial number inside the scale? Do you have the original lock and key? Is the scale working?” Later that day, the seller wrote back “Thank you for your message and interest in the scale.

Yes, it does have a serial number

on the back of the hat. I have attached an image. (Figure 5) There is a lock and key, (Figure 6) but I do not know if this is original or not. I have also attached an image. I have never tried to put a penny in to see if it works—so I don't know. If you have additional questions, please do not hesitate to reach out. Thanks again.”

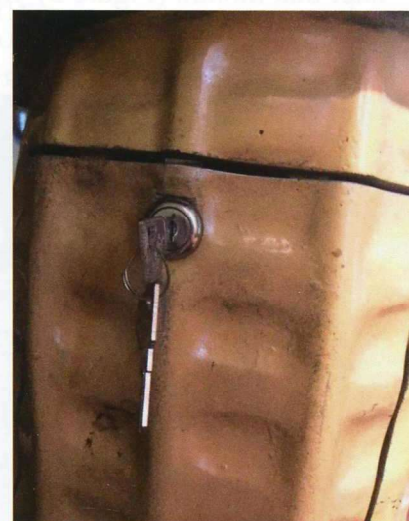


Figure 6. ▲▲ The lock had been changed sometime during Mr. Peanut's life.

After receiving the above answer from the seller, we wrote back to James. "The lock is new. Like most of those scales, it was probably repainted years ago. Bill will look up the serial number tomorrow." On June 3, we wrote to James "Bill looked up the serial number on the Mr. Peanut scale and as far as he knows no parts have been sold for it and no one has asked about it. The serial number is right in the center of those known for Mr. Peanut scales. Everything looks original except the lock. We can provide an original lock and key."

On June 4 James responded "Thanks for the info. So, basically what you are saying is that there is no record of this scale being on the market before? As you can see, I am trying to hit the reserve, but I can't seem to...What are your thoughts? If the reserve isn't met the seller said she would contact me. Keep in touch."

The auction ended on June 5 and the scale was relisted. On June 7, we again wrote James, "We noticed that it was relisted with a buy it now. Did you decide not to get it? We will be in the Buffalo area to visit our son and grandson at the end of August." James responded on June 8, "I am working with the seller now. I did have the top bid. I will keep you in mind if my logistics don't work out. I appreciate it." On June 10, James wrote again, "Finally the seller is communicating with me again. If I were to make a deal with the seller; how much would you and Bill want for picking Mr. Peanut up? To be honest, I haven't had much time to think, as work has been crazy. Keep in touch."

Later in June, James told us by telephone that he had been successful in negotiating a deal on Mr. Peanut and that the seller wanted a cashiers check at pick-up. He was very excited. During the call, we explained to James that we would leave on August 21 to visit our son in northern New York and that we could pick up Mr. Peanut on our way home. On July 10 James wrote "I'm trying to figure out my vacation schedule for August. Do you think I could come and get Mr. Peanut the 27, 28, or the 29th? I would prefer the 27th. Just let me know your thoughts."

We replied "Hi James, Our primary reason for going to NY is to visit our son Jonathan and to celebrate our Grandson Jaxon's first birthday on August 23. We have an antique show in Bloomington, IL on Aug 20, so will not leave here until the 21st. Bill does not want to travel on Labor Day weekend so we plan to leave NY on Sept. 5, at the earliest. We have events scheduled on Sept 10, 16-17, 23-24, and the Michigan meeting on Sept. 30. Other than those dates, we are free. It takes at least 15 hours from Jonathan's home to ours without stops and we prefer to do it in two days. I know waiting for Mr. Peanut to arrive at his new home is difficult, but you are saving \$\$ by us picking him up for you. We will probably pick him up the afternoon of September 5."

James wrote back on July 11, "Sounds good Jan. Again, I really appreciate your help on getting him. I know I just have to be patient." The next email from James came on July 27, "I have looked at my work schedule and if I came out to pick Mr. Peanut up on September 9th, would that work? Also, probably in the next couple of weeks I will get the cashiers check ready to send to you. I assume send to your home address? I just emailed for contact info and the place for pickup. I will email again once I get the check sent off. Thanks Jan. James" We responded on July 27, "Hi James, That works well for us. Fondly." James responded on July 30, "That is good to hear Jan. I will have to take you and Bill out to lunch that day. Should have contact info either tomorrow or Tuesday. Keep in touch."

On August 8, James wrote, "I have the cashiers check ready to mail off tomorrow for Mr. Peanut. Below is the seller's contact info. I will touch base with you before you leave. I hope all is well. Thanks." We replied that day, "We will be leaving Massena, NY, where Jonathan lives and FYI it is about a 5 hour drive to where the seller lives. We should be able to get there no later than 11AM. Do you want me to follow up with you and/or the seller?"

On August 9 James wrote, "Thanks Jan. I will follow up with her. Please let me know when you get the check. I got it in the mail this morning. I also put in a few business cards please give one to her. Getting ready for an all day meeting. Not looking forward to it. Haha. Keep in touch." On August 12 we responded, "Hi James, We received your check in today's mail. We will keep you informed as to our pick-up of your Mr. Peanut."

James responded on August 13, "That's good to hear. I will be picking him up before I know it. I do have a question. What would Bill charge to restore the insides? Maybe it won't need anything. If I decide to repaint him, my Dad's uncle owns a body shop, so if I decide to have him repainted that would be the route. At the very least I know he will need a original lock and key. What will that cost me? Right now, email is the best way to reach me. Thanks."

On August 20 James wrote, "I think everything is set on my end. If you need to get ahold of me, if you can, text messages are the best. If there is an emergency during the day, you have my business card so call me at work. I am not sure if I have it, but do you have a cell number so I can give to the seller? It sounds like Dad wants to come out with me to pick him up on the 9th. Thanks."

Then on September 3 he wrote again, "I hope everything is set for Tuesday. I had forgotten to mention that I will be in an all day meeting and if something comes up I won't be available. I trust you and Bill to make the right decision in the unlikelyhood something is wrong. I will email later in the week for our plans on Saturday. Thanks."

We left our son's home on September 5 about 6 AM and arrived at the seller's home in a suburb of Buffalo, NY around 11AM. We spoke with the seller for about 30 minutes and checked out the scale. We had hoped that Mr. Peanut would fit in the back seat of our pick-up truck, but he didn't. We wrapped him in a blanket,

covered him in a tarp and laid him carefully in the bed of our truck. While stopping for lunch at a fast food place near the seller's home, we gave James a call. Since he was in an all day meeting, we left the following voice mail on his work phone, "Mr. Peanut is headed to Sycamore, Illinois, to visit his brother for a few days."

The rest of the trip was made in one day since we had a rare scale in the truck bed. We arrived back at home around 11 PM, having baby-sat our special passenger all the way. We could not leave him alone in the truck for even 1 second. On September 6, we sent an email with the subject line *Brothers Reunited* to James stating, "Hi James, As you can see from the attached photo (Figure 7), Mr. Peanut arrived safely in Sycamore, IL, late last night. The brothers are happy to see each other and visit for a few days. See you on Saturday!"



Figure 7. << Mr. Peanut scales reunited.



Figure 8. ▲▲

James and his father arrived on Saturday, September 9, around 10 AM, to pick up James' Mr. Peanut scale (Figure 8). The scale was placed gently in James' trunk on top of a soft plush blanket (Figure 9), surrounded by cardboard and wrapped in a home-made quilt (Figure 10). He arrived in Iowa later that day. Congratulations James!!

Since the brothers were reunited, we have done further research on these rare scales. In speaking with Scott Schmitz, President of Peanut Pals, the Mr. Peanut collector's club, we learned many facts about these rare scales. The scales were designed to stand outside or inside the Planter's Peanut stores. There were a total of 69 Planter's stores across the USA with the largest stores at Atlantic City, NJ, and at Times Square in New York City, NY. Each store had at least one Mr. Peanut coin operated scale and it is believed that about 100 scales were manu-



Figure 9. ➤➤

Figure 10. ▼▼



factured in the 1950s. It is known that Planter's was sold to Standard in the 1960s. Soon after, people were visiting Planter's Stores to destroy these scales with a sledge hammer, but some store owners saved the scales. It is believed that around 50 may still exist in private collections. Four of those remaining are in ISASC member's collections.

The scales do come up for sale sometimes, but they are in great demand by scale, Mr. Peanut and advertising collectors. Collectors need to be careful as reproductions of these scales, that were made in the 1980s, do exist.

The Big Scale

BY GREG HILL & ERNIE SEGUNDO

This is a story of “One Thing Leads to Another”: Help some friends; Meet new friends; Reengage with old friends; Have a great time building memories with all. Oh, by the way, it is also a story about moving one of the biggest scales in any of our collections.

Jack Young, a dearly remembered friend of all of us in ISASC, passed away last year after many years of working with J. P. Young – Scales in Hawaii and collecting scales. It was a labor of love for him, and he was willing to share that love with many. As has been the case with a number of our members who have passed, especially those with a “large” collection like Jack had, the family will want to hang on to some of those scales that were important to them in some way, but then the balance needs to be moved along. In this case, Jan and Bill Berning (old friends) were called in to sell the majority of the scales for the family. Since they were picking these scales up in California, and since Jack and I had worked together in years past to repair scales in our collections, and get them prepared for showing at the Riverside California Convention, and being retired, with ‘nothing to do’, I volunteered to help the Bernings and the family pack scales. Three days later, we were still packing, and the family (new friends, except for Jackie who we all knew from being with Jack at several Conventions), having to get the house cleaned out and put up for sale, had a problem.

“The Big Scale” (a 2,600 pound, ten foot high, Bullion Scale, made for the Philadelphia Mint) had to be moved and sold. (Figure 1) After being turned down by an auction house to take over the sale, the family and those of us around put our heads together and tried to decide who within ISASC should purchase this scale. You will see in this story that Ernie Segundo turns out to be the perfect candidate.

Well, the first task was to get “The Big Scale” out of the house. And, being retired, with ‘nothing to do’, the conversation came around to: could I dismantle “The Big Scale” and store it until it could be sold. Well, by this time (a week into the cleaning and moving process), I was considered a part of the family, and said “sure, why not.” I did have the space to store it, and timing was becoming critical. So, the next phase starts.

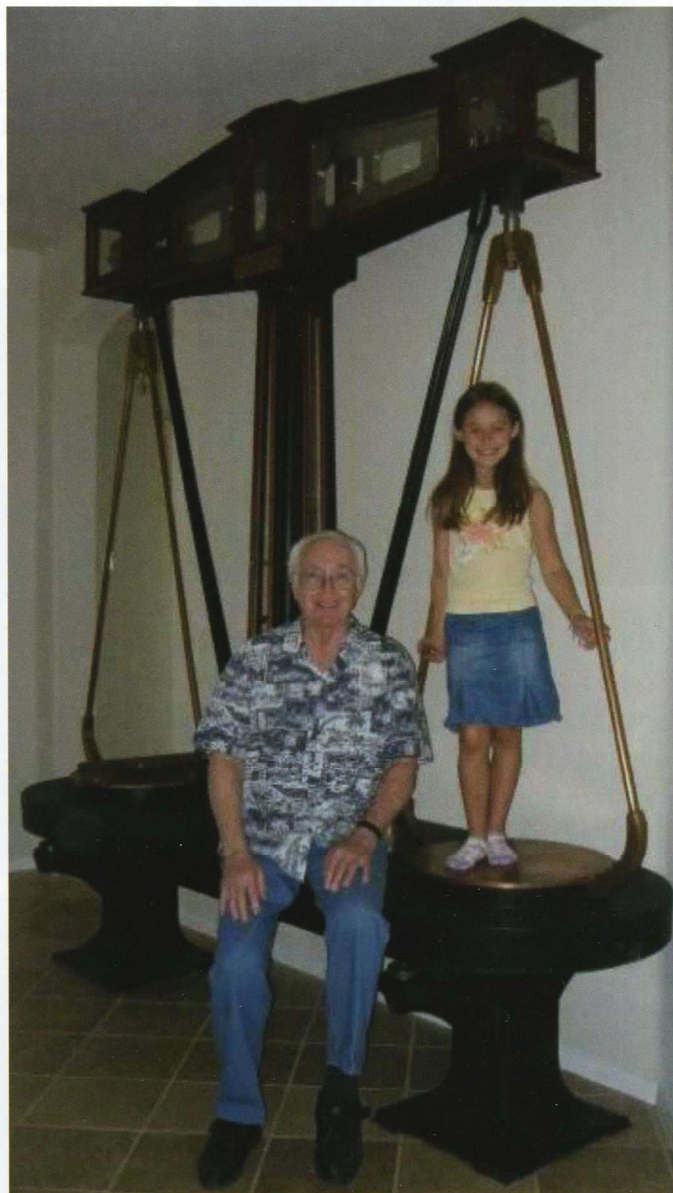


Figure 1. ▲▲ "The Big Scale" as seen in Jack Young's home pictured with his grand-daughter.

I gathered others (family and old friends; Zack, Kevon, and David) around and said, "Boy, do I have some fun for us." They did not believe me, but they came along anyway. We did have two days of fun and comradery that we will not forget for a while. Jack had prepared well when he first bought the big scale, in that he had purchased an engine hoist, a pallet jack, a number of heavy moving blocks, and he had made some very sturdy rolling pallets. They were all stored away in his garage for just this occasion. As part of the eventual sale, these all went along with "The Big Scale", and what a good thing they did!

Over two days, "The Big Scale" was dismantled, with much discussion on what to take apart when, and how to package it such that no damage would be sustained. The biggest part, the 1,300 pound base, was moved out of the house by brute force and intricate maneuvering, and placed on a flatbed trailer. The other 19 large and small pieces also found their way to the trailer, well packed for transport and storage. In this process of removal, we found out just how bad Jack must have wanted "The Big Scale" in the first place. The effort to get it in to his house and to be sure it would fit, must have been a daunting task some 22 years earlier.

The second day for our crew was to find a place to store "The Big Scale" at my place, get it off the trailer, and keep it in a safe condition. Oh, and the other part, I was supposed to remember how it all went back together. We would later see that that did not work out the best. Some parts were assembled, and re-assembled, before "The Big Scale" came to final rest.

Then there was the wait on negotiations for a sale. More will be told about that by Ernie, but for my part (and my wife Judy who had initial reservations about my comment on what a great adventure this would be), a road trip was sitting in the wings. It turns out that the sale was not going to go through until I agreed to transport "The Big Scale" across country (California to Florida) and help set it up. Through insistence by Ernie, and coercion from the family, I did agree, and a month later, that three week adventure began.

A U-Haul trailer was picked up and more help was recruited to load "The Big Scale". (Figure 2) During one long day, "The Big Scale" was packed and secured for 2,500 miles of travel in the trailer, and an additional 200+ scales from another collection (being donated from a West Coast collector) were packed on the truck for an additional 1,000 mile trip from Florida to the ISASC Museum in Pittsburgh. We made that part of the trip in two days after leaving Florida, spent a day with Mary Anne at the Museum, and then spent nine days getting back to California. 6,000 miles in total, touching 21 States in the process, and seeing a number of Museums and beautiful sights along the way. But, I get ahead of myself.

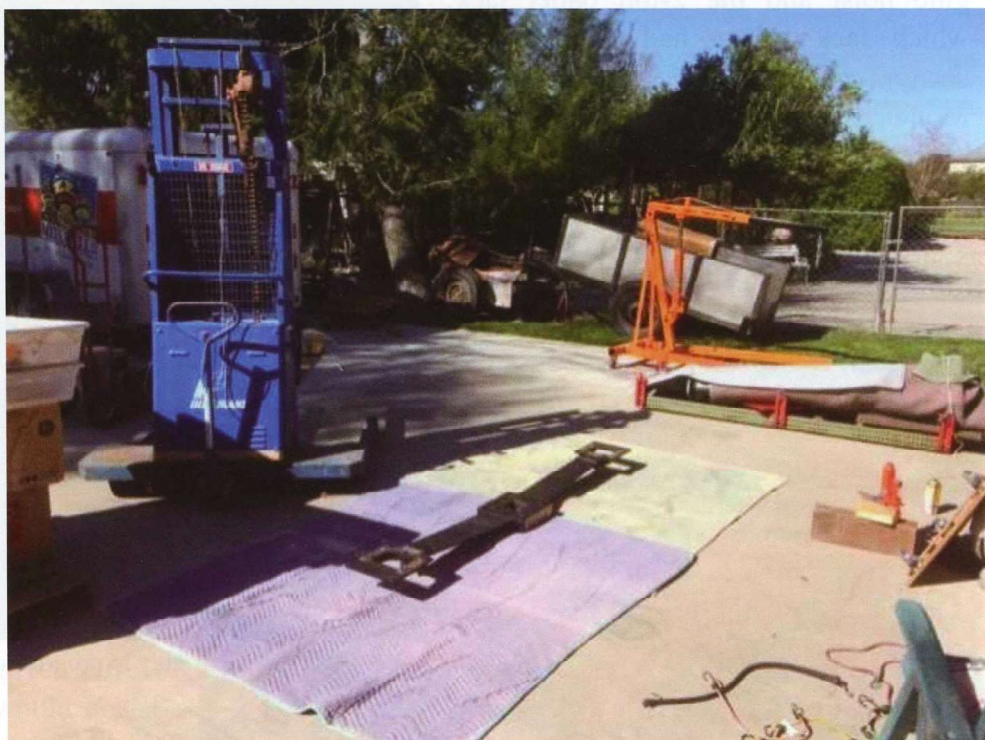


Figure 2. ^^ "The Big Scale" in parts ready for loading at Greg's home.



Figure 3. ▲▲ Judy & Ernie admire the arrival of "The Big Scale" in Gulfport, Florida after 2,500 miles.

The Adventure Trip began (I keep telling Judy that it was an adventure). Judy and I spent 6 days traveling across the southern US, seeing family and friends along the way, getting to the beautiful home of Ernie and Sasha Segundo (reengagement with old friends), in Gulfport, Florida, late one evening.

The building of "The Big Scale" began the next morning, but my part of this story is complete, the rest belongs to Ernie. Greg Hill

As Greg has related so far, to say this was a Herculean task is an understatement. After a restful night following Greg and Judy's arrival, unloading and re-assembly was the next task.

In addition to Greg and me, I had on the ready Doug, a trusted (and strong) friend who had helped with many other of my weighty projects. Starting at 9 a.m., we unloaded the beautifully and carefully packed scale, one piece at a time. As can be seen from the pictures, we once again enlisted the help of the 2-ton engine hoist and the 2-ton pallet jack, which Jack Young had acquired and used in the original move from Clem Monday's place, some 22 years ago.

Aside from a huge scare when Doug accidentally released the engine hoist holding up the 1,300 pound base which then almost crushed Greg, some 3 hours later, the parts were inside ready for assembly. We got that nearly-Greg-crushing base up on wooden blocks in the intended location, and then let Doug go on to other things, as Greg and I prepared for the re-assembly. Our patient, supportive wives, Judy and Sasha, stopped by with greatly appreciated drinks and sandwiches.

Recharged, Greg and I commenced the final assembly. Any member who has worked with a 36 or 48 inch bullion scale of Henry Troemner's or similar design knows the basic construction: heavy base, central support, loading mechanism, beam support, beam, and reinforcement bars extending in a "V" from the base for the beam support. Making our assembly particularly challenging was the fact



Figure 4. ▲▲ Assembly in progress of "The Big Scale"; Greg never stops moving.

that the central support (weighing approximately 300 pounds) and the reinforcement bars had to be attached from underneath the 1,300 pound base. Even more challenging was the fact that one person on the assembly team forgot about this aspect with respect to the reinforcement bars after we had already lifted the central support in place and painstakingly attached it to the base. Accordingly, the central support had to be removed and the entire base had to be lifted back into place again and re-positioned on the wooden blocks in order to correctly attach the V-shaped reinforcement bars.



Figure 5. ▲▲ Further assembly; V-supports now in place.

and fit very precisely on the hangers. It was also interesting to see how carefully crafted the wooden and glass beam cover fit on the beam support. Indeed, only thanks to Greg's careful packaging did the delicate cover make it 2,500 miles unscathed. Accordingly, some 5 hours after commencing final assembly, The Big Scale was back together by 5 p.m.

Before wrapping up the story (and keeping our sideline adventure to save a neighbor's boat from sinking for another day), I would like to share an anecdote about Greg's determination to get everything exactly right. As shown in the pictures of The Big Scale with Clem and Jack, there are actually two support stands, each weighing about 150 pounds that go with The Big Scale, presumably to make it easier to load and unload ingots on the trays without having to bend over as much. Resting upon those supports, The Big Scale would be close to 10 feet tall, which given our 10 1/2 foot ceiling height, we felt would not allow assembly. After 8 hours of back-breaking unloading and assembly without the

This also meant another crush-defying trip for Greg back under this shaky structure. Once accomplished, the rest of the assembly went reasonably quickly, particularly given the practice we had! It was actually fun to get to the part where we were assembling the pan trays and their hangers. Each piece was precision made and marked to indicate left or right for accurate balancing. For perspective, the round brass pan trays alone that rested on the hangers each weighed about 75 pounds



Figure 6. ▲▲ Greg and Ernie celebrate completion.

stands, just as we put the wooden beam cover in place, Greg said, "Do you want to try it again with the stands?" Remembering the ordeal we had just been through, and with just the thought of Greg back under that 1,300 pound base resting on shaky wooden blocks, it took me two seconds to deliver my response, "No #@*% way!"

This essentially completes the story of the long trek of "The Big Scale," a particularly weighty, yet important item that through its size and relevance to our hobby, deserves the loving respect it has received over time. Indeed, from the nation's Philadelphia mint, through intermediaries, to Clem Monday's diligent restoration, then Jack Young's careful preservation, and finally, Greg Hill's substantial efforts, the 10,000 troy ounce bullion scale once again rests in a place where it will be honored and admired. As the Patek Philippe watch advertisement advises, "You never actually own a [insert your treasured collectible], you merely take care of it for the next generation." Well said. I believe I speak for all parties in that this whole process would not have been possible without Greg Hill's expertise, effort and determination to get the job done. I will proudly be the keeper of "The Big Scale" until the next keeper comes along.



Figure 7. ▲▲ Clem Monday restored "The Big Scale" circa 1995.



Figure 8. ▲▲ Sasha & Ernie with daughters Karissa & Eliana at "The Big Scale's" new home.

Meet Our Members

BY MAL CAMPBELL

My Path to the Scale Side of Life.

Hi, my name is Mal Campbell, I live in Melbourne, Victoria, Australia, (Fig. 1) and I am new to the ISASC and to scale and weight collecting.

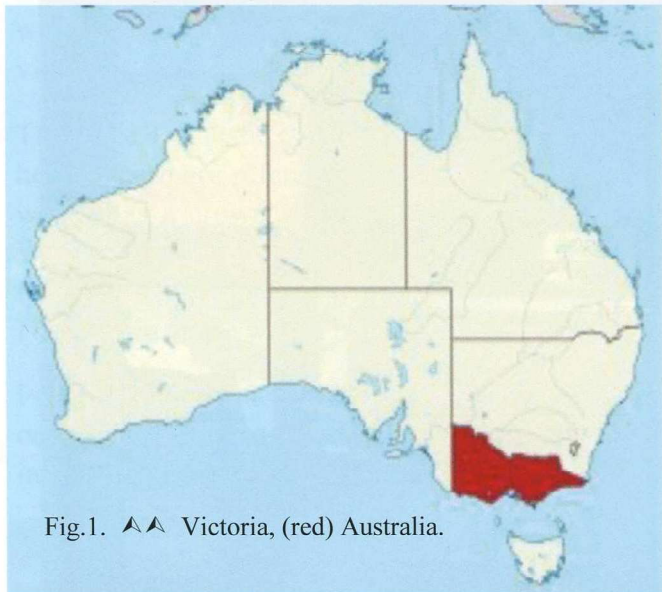


Fig.1. ▲▲ Victoria, (red) Australia.



Fig. 3. ▲▲ Pennyweight enlarged to show detail.

My scale and weight journey started a few years ago, while on a day out gold detecting, in central Victoria Australia, I found a curious little object, a half pennyweight (Figs. 2 & 3). Location, Amherst, Victoria, which is coincidentally in the geographic centre of Victoria. No one found gold that day, but I found a little treasure which was to open a new interest in my life. It was not just any half pennyweight, but a W & T A half pennyweight.

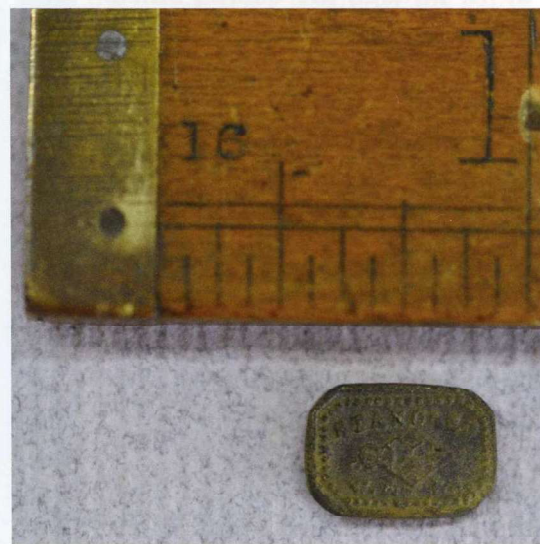


Fig. 2. ▲▲ The actual size of the pennyweight found metal detecting.

That pennyweight sat with some of my other interesting but miscellaneous finds (musket balls, coins, part of a wick trimmer, buttons, etc) for a couple of years. Then one day in early 2016, I was cleaning it up a bit and started to wonder who were W & T A? I soon discovered who W & T Avery were.

Victoria was one of the largest gold producing areas in the world and more large gold nuggets have been found in Victoria than elsewhere in the world. The Welcome Stranger 2,315 troy oz was found in 1869, a bit further north in Dunolly, Victoria. The largest nugget found with a detector was found further north in 1989, 874 troy oz. You can Google Victoria, Australia, Golden Triangle and look at the images of finds, - takes your breath away. My finds from 1 troy ounce and much smaller pale into insignificance; but are priceless to me as I am the first person to find them in over 400 million years. I love the activity of getting out into the outdoors with mates (Australian slang for friends) and in turn it has heightened my interest in our history, geology, flora, fauna, the general preservation of and re-establishment of biodiversity of our native bushland, and now scales and weights.

Once I started to research W & T Avery, I realised that eBay was a good source of interesting scales and weights, locally, in the USA and UK. My interest in gold and the goldfields furthered my interest in penny weights; other troy weights and in the scales used in the goldfields.

The small portable scales would have been used to measure the gold that prospectors sold to buyers or exchanged for supplies with shop keepers who set up shop in tents throughout the goldfields. When a rush petered out and the miners moved on to another area, the shopkeepers followed them. When alluvial gold became scarce and hard rock deep mines were introduced to follow the seams of gold down through the quartz, others dug deep to find ancient river beds or deep leads which also contained gold. Large steam driven pumps were required to lower the water table to allow mining and railways were built to open up the country side. The discovery of gold was the start of many industrial companies throughout Victoria; sadly not many are still around.

On eBay, I spied sets of small beam scales in boxes with labels inside the lid (Fig. 4) and a few weights in a small corner division in the boxes. Before long, I realised that they were not all the same, another challenge to be dealt with and solved. Along the way, I realised that these small scales were not a large part of the



Fig. 4. ^^ A snapshot of most of my small but growing collection of W&TA portable scales (for better quality images of the labels and pan stamps refer <http://collectinggoldscaletroyweights.co.nz/>)

huge Avery business and certainly not at the high end of the products they made. Therefore, it has not been easy to find out a lot of information, which is no doubt part of the attraction. This led me to search for catalogues for more detail of the scales. I am now also collecting old Avery catalogues as they assist in dating scales of various sorts. I have some from the late 1890s onwards but I am looking back further, before 1890. I would be keen to hear from anyone who is prepared to sell catalogues or share copies. I have already swapped a few with Ritzo in The Netherlands, thanks Ritzo. It is also great to be able to treasure and preserve these old books, which are a wonderful record of their times together with the trades and industries which used the scales and weighing machines.

So, along the way I have collected nearly 20 sets of small beam scales in boxes with varying labels. Of the 6 labels that I know to exist, I have all except one. The missing label was the first one I saw on eBay and at the time it looked like a photocopy, but I later realised it was different from all others I have seen, and I am still searching for one of these. Coincidentally, I found out recently that a fellow ISASC member and my good friend Tony McCarthy in New Zealand had purchased that set of scales and weights in early 2016. Small world, isn't it. I am so pleased it is in safe and appreciative hands. I have been very fortunate to meet Tony via ISASC. More about Tony below.

The W & T A scale pans also have differing markings stamped on them. There is more mystery to be solved here. There are references to the Late T Beach (first half of 19th century), as well as a W & T A trademark which has a crown stamped above the trademark. There are some which do not have the crown. Why? Which one came first? What is the time frame for each stamp? Another stamp refers to "By His Majesty's Royal Letters Patent", which has no W&T A reference on it but, I believe it is W & T A as the only examples I have seen come with a box with W&T A label inside the lid. So many more mysteries to solve.

I also have a couple of non-W & T A small beam scales in boxes, as well as three W & T A steelyard scales, one W&T A Counter Scale (circa 1916) and a very small set of scales in a tin which were found by the seller in the Victorian goldfields. He kindly included an old penny and a Chinese coin in with the scales, which were found near the scales.



Fig. 5. ▲▲ The "5" indicates Eaglehawk Borough. Eaglehawk today is a suburb of Bendigo, a city built on gold.

It is amazing how far and wide these scales and weights have travelled. W&T A scales and weights manufactured in the UK have ended up in Australia. One set of scales I purchased from USA had accompanying round stacked troy oz weights, one of which had a verification stamp from Victoria, Australia. I have not come across very much written about the systems of verification in the various states of Australia.

As time in my working life permits, I am following up at the Public Records Office of Victoria in an effort to gather information about the numbers used for various shires, district unions and boroughs. The Borough of Amherst, where I found my first half pennyweight was number 22. New South Wales also had a verification system, but that will be another search

in the future. If any members have any information or sources for details of verification systems implemented in the various states of Australia, I would like to hear from you.

Along my short journey in the world of scales and weight collecting, I have been overwhelmed by the welcoming and generosity of spirit which has been afforded me by members of ISASC USA and Europe. I regard myself to have been fortunate to have joined this group. My queries have been answered generously and my connection with Tony, my New Zealand colleague, is developing. Tony and I have set up a small web site, focussed on early gold mining in NZ, troy weights and a section about W&T A boxes and scales. <http://collectinggoldscaletroyweights.co.nz/> Tony has a fabulous collection of large troy weights and other associated scales. Tony's Grandad was involved in gold mining in New Zealand and in particular dredging for gold. Tony has an article in EQM Issue 1 2017, a great read. There were a number of dredges in Victoria, but other than the remains of a couple of them, little visible evidence remains.

My other interests are a small bush country property in Victoria where we spend some weekends. I have a number of nest boxes fixed to our native Eucalypt trees to support and encourage small marsupials, brush tailed phascogales (suggest you Google them) and sugar gliders. The trees on our property and in the local area have been felled a number of times since the mid 1800s gold mining activities. Although there are some large trees, not many are old enough to have natural hollows for the nesting sites required by these marsupials. The brush tailed phascogales are currently threatened and are rarely seen as they are nocturnal, live only a year and are worthy of assistance.

I also plant a few native trees each year raised from seed collected on the property. Only a few per year, as the ground is very rocky and hard, and I limit the holes I have to dig. Interestingly, the trees that seed naturally grow quicker than those that I plant.

My other interest is in our Australian Rules Football completion, a game unlike most others. Too hard to explain here, Google or YouTube it. It is played from March until late September and I miss it when it is out of season.

Thanks to all members of the ISASC for the warm welcome. I would welcome any questions or comments as well as any information regarding the chronology of the box labels and the scale pan stamps and sources for old catalogues. camwens@bigpond.net.au.



Figure 6. ▲▲ An W & T Avery gold scale in the author's collection. The oak box measures $7\frac{1}{16}$ inches by $4\frac{7}{16}$ inches by $1\frac{5}{8}$ inches high. It has a steel beam measuring 6 inches long with swan neck ends. The brass pans are stamped *Late T Beach* and measure $3\frac{11}{16}$ inches in diameter.

Four Interesting Folders

BY DON SCHOENLY

My wife and I have a modest collection of English folding gold balances. We think four of them are a little unusual. We thought some other members of ISASC might find them interesting.

The first is an unnamed folding sovereign counterfeit coin “detector”. (Figure 1) It is called detector because in addition to the folding scale it has a slot gauge to measure the thickness and diameter of the sovereign and half sovereign. The gauge fits into a slot along the side of the box with a corresponding slot in the lid to accommodate the top of the gauge. Michael Crawforth references a similar detector in his book *Weighing Coins, English folding gold balance of the 18th and 19th centuries*. (Picture on page 105 and description on page 108.) The detector he references also had weights in the box. In his description, he says the gauge was made of iron. When we purchased the detector, it did not have the gauge. In fact, I did not know what the

slots were for. Michael Foster, an ISASC member, told me that a gauge belonged in the slots. He provided the picture from Michael Crawforth’s book and the dimensions for the slots. I decided I wanted a gauge for my detector. Bob Jibben, another ISASC member, made the gauge for me. We

decided on brass because it is easier to work with and it looks better. The box closed measures $4\frac{1}{8}$ ” and is sometimes referred to as a “Mini” folder.



Figure 1. ♡♡

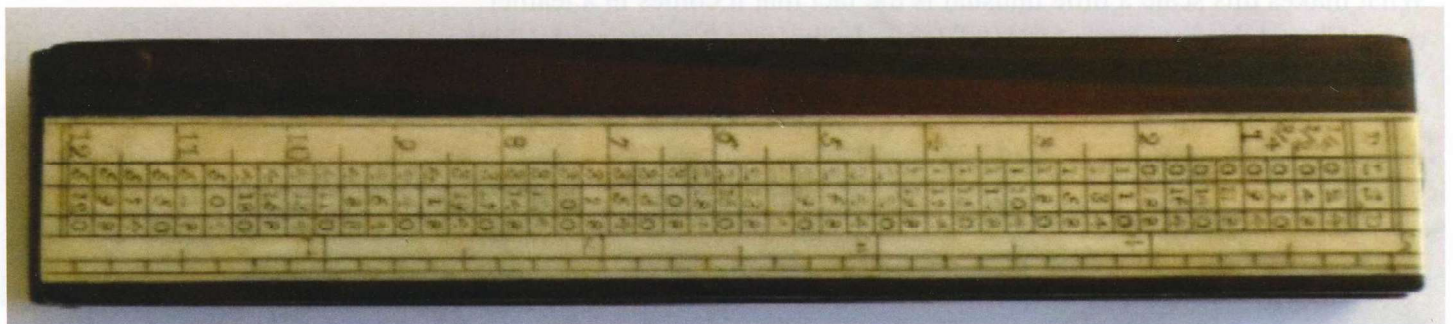


Figure 2. ♠♠

The second is another unnamed folder. This scale has a table of sizes and prices engraved on an ivory panel set into the lid of the box (Figure 2). This scale is also referenced in Michael Crawforth’s book on page 96. Michael says that the sizes and prices engraved in the ivory are apparently for iron bars and the scale is made in the Birmingham style. The box closed measures $5\frac{1}{16}$ ” long.

Figure 3. ∇∇



The third is a folder made by W & T Avery (Figure 3). What makes this folder a little different is the catch to close the box. See pictures. Here again Michael Crawforth has a reference for this catch. It is on page 77 for the picture and 78 for the description. Michael indicates that this catch is one of the most reliable catches and also one of the most complicated to make. The scale we have also has a registry number stamped on the catch. The number is 501652. My guess is that this number is the registry for the design of the catch or some part of the catch. When this scale is closed it measures $5\frac{7}{8}$ " long.

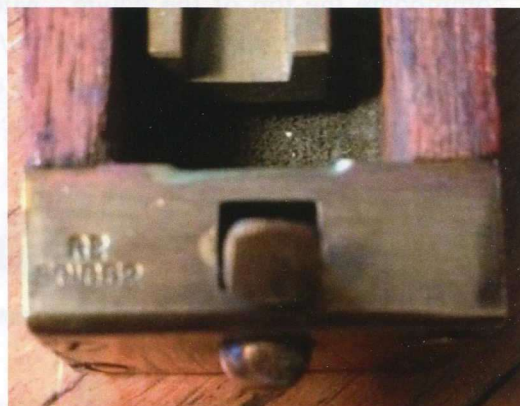


Figure 3. ∇▷△



The fourth folder is a sovereign scale made by Houghton and Son (Figure 4). What makes this scale a little unusual is the fact that it comes in a leather case. Closed the box measures $5\frac{7}{16}$ " long. In the case it measures $5\frac{1}{2}$ " long.



Figure 4. ◁△

A Brief History of the Price Computing Scale

BY GREG MOSS

The price computing scale – a scale used in grocery and hardware stores to automatically determine the value (or selling price) – had its growth during the first half of the twentieth century. The industry innovated, grew, and then matured and consolidated, so that by the 1950s there were only a few manufacturers left. Then, starting in the 1980s, along came the load cell and electronics that make up today's digital scales.

Start with the fact that a scale – any scale – is the outcome of a need, a solution to a problem; always a follower, never a leader. So, although the earliest patent was by Tilly and Warren Flint in 1849, the device never went anyplace. The industry that developed actual took its birth more than 35 years later with the Pitrat Computing Scale Co. of Gallipolis, Ohio, based on the 1885 and '86 patents by Julius Pitrat. A slow start gathered momentum until there was this explosion of inventions and companies within a couple of years surrounding 1900.

However, price computing scales did not blossom because they were so neat and beautiful. This brings us back to the question, "What happened?"

State of the Union: 1900

I found three key elements that came together around 1900: Industrialization, demographic shift, and the economic environment. Even these are intertwined, with one affecting the other.

Industrialization

The period from 1870-1914 is often called the "Second Industrial Revolution." Railroads were built across the country, the Bessemer and open hearth steel ovens were developed, and we saw the electric light, transcontinental telegraph, and the telephone. And it wasn't yet 1880!

The U.S. industrialization created factories, and factories were in major cities.

Demographic Shift

The shift in population to the cities is well stated by Jonathan Rees:

Cities in America date back to the beginning of the colonial period, but the tendency for new industrial factories to be located in or near urban areas meant that cities grew much faster during the late 19th century than ever before. This trend was most apparent in large cities like New York, which expanded from approximately half a million to around 3.5 million people between 1850 and 1900, and Philadelphia, which increased in size from slightly more than 100,000 inhabitants to more than 1.2 million people over the same period. During the last half of the late 19th century, Chicago proved to be the fastest growing city in the world. Overall, 15.3 percent of Americans lived in cities in 1850. By 1900, that percentage had increased to 39.7, and kept growing. The 1920 Census revealed that more Americans lived in cities than the countryside for the first time¹.

Think about the change of producing and buying-selling food. First, transportation improved allowing food products to be moved more quickly and efficiently to towns and cities. This meant more “shopping” for food, rather than relying on home-raised meat, fruits, vegetables, staples, etc.



The movies depicting grocery shopping in the 1890s (and well before that time) are quite accurate. The housewife (it was *never* the cowboy) went into the general store with her basket and a list; the grocer and assistants filled the order (by the way, it was the 1920s before self-service grocery stores, i.e., “supermarkets,” were developed). But pay special attention to the way the quantity was requested: “Make that 9-cents worth of flour, 4-cents of sugar, and 3-cents of butter.” Today, we would get a 5-pound bag of flour, etc.

The problem: The quantity was by value, the measuring (i.e., scales) was by weight. And the process required many things to be weighed because very little was prepackaged. As a merchant, you had the challenges of math, speed, and accuracy. The typical scale was a simple balance with a half-ounce gradation, and the scale had to tip in the customer’s favor, in other words, the quantity was always rounded up. This opened the door for a new solution, a scale that measured quantity by *value* in addition to weight – the price computing scale.

Back to *Industrialization* for a moment. The cost of iron was dropping, and the quality of tooling for the manufacturing process was improving. This combination allowed a manufacturer to produce a scale that was more complex, with higher accuracy, yet priced within a grocer’s budget. The salesman, according to a booklet by the Computing Scale Company of Dayton, Ohio, would demonstrate to the grocer how much the grocer was losing due to the typical balance scale – and, therefore, this new computing scale would pay for itself in just a couple of months!



Economic Environment

If you look at Wikipedia: “List of recessions in the United States,” you will find the core of the issue. The years 1873-96 are sometimes labeled as the Long Depression. There was the Panic of 1893 when the Reading Railroad went bankrupt. We also had a banking collapse and a run on gold. Then we had the Panic of 1896, when “production shrank and deflation reigned.”

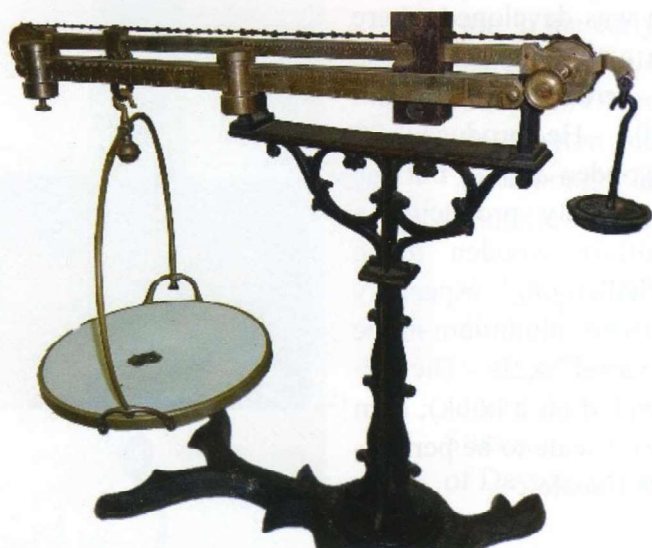
But coming out of the Long Depression, you found a spirit of willing investors, of risk takers, of inventiveness. This is the combination that many scholars attribute to Detroit becoming the automobile hub (along with rail and ship terminals). Concurrently, actually preceding the automotive industry by a couple of years, the price computing scale industry developed in the same geography: first Dayton, then Detroit, then Toledo.

Price Computing Scale Development

By a large ratio, patents are not for a core invention; rather it’s a process of innovation – creating a new, improved approach to prior patents. The price computing scale industry followed this same path.

The Romans and the Chinese had developed the steelyard scale more than 2,000 years before Julius Pitrat used that principle for his price computing scales, with his first patent in 1885. We're not sure what his scales actually looked like (none are known to exist); however, he sold his patents to the Detroit Computing Scale Company, which was in business from 1889-1890. That business failed, and Edward Canby and Orange O. Ozias bought it and opened shop in Dayton, Ohio. This became the Computing Scale Company, building and marketing scales in 1891. This had to be difficult because the economy was still weak.

The Dayton scale was somewhat complicated to use, and that inspired Walter Stimpson of Milan, Michigan, to develop a table in 1895, so that the weight, unit price, and total value could be found in one step.



Detroit Computing Scale Company



Computing Scale Co., Dayton, Ohio



W. F. Stimpson Company, Detroit



Toledo Scale Co.

The next major advancement came quickly. Allen DeVilbiss, Jr., of Toledo, Ohio, created a fan-style scale, patent filed in 1900. That same year, Henry Theobald was fired from the National Cash Register Company; so the next year, he bought the DeVilbiss company and incorporated what became known as the Toledo Scale Company.

Overlapping this 1895-1900 timeframe, another approach was developed where the table was on a rotating drum. The first patent was actually by William Phinney in 1870. He produced 20 scales using a wooden frame, but the difficulty of repeatedly producing a light-weight, uniform wooden frame was probably challenging, especially compared to the use of aluminum in the

1895 version. This style of scale is commonly called a “barrel” scale. The early ones were primarily hanging scales (with a pan suspended on a hook); then they moved to platform scales. It took a while for the barrel scale to be perfected, but then it became the dominant type of price computing scale.



William Phinney



Boston Computing Scale Co., (c1897)

(Bought by Computing Scale Co., Dayton, 1899)



Computing Scale Co., (c 1907)

Dayton, Ohio



Barnes Scale Co., (c 1922)
Detroit

In the mid-1920s, all the major producers switched to white porcelain finishes, and the profiles kept getting lower. These scales were widely used throughout the world until digital scales came into the market starting in the 1980s. But, I'm sure many of these old scales are still living a productive – and accurate – life!

Historical footnotes:

1. The Phinney scale of 1870 became important in lawsuits as the Computing Scale Co. of Dayton sued anyone who tried to market a barrel price computing scale. Toledo Scale lost a \$400,000 judgment to Dayton in the early 1900s based on infringement of Albert U. Smith's 1885 patent that belonged to the Boston Computing Scale Co., which Dayton bought. Other competitors used the Phinney scale as "prior art," and the Dayton suits were either denied or dropped. Dayton was known to have bought and destroyed all the Phinney scales it could find, hoping that the courts would look at Phinney's patent as unworkable.
2. The company we know as IBM was called C-T-R before 1924. C-T-R stood for the three companies that were brought together under one corporation in 1911, and the "C" was for the Computing Scale Company of America – which goes back to a trust formed in 1902 between the Stimpson Computing Scale Co. of Detroit and the Computing Scale Co of Dayton, giving the trust 50% of the market.

Notes & References:

Industrialization and Urbanization in the United States, 1880–1929, by Jonathan Rees, *American History*, Oxford Research Encyclopedias, Online Publication Date: Jul 2016

Cover Photo

The detail shown below shows the small poises that belong with the scale shown on our cover. The patent dates listed on the plaque are as follows:



PATENT DATE	PATENT NUMBER
Mar. 31, 1885	314,717
Jan. 11, 1887	356,077
June 26, 1888	385,005
Apr. 28, 1891	451,075
Nov. 22, 1892	486,663; 486,695; 486,787
Oct. 17, 1893	506,793

Patents can be viewed by inserting their numbers one at a time in the search box here

<http://patft.uspto.gov/netahtml/PTO/patimg.htm>

Letter Opener Scales, Part 1

BY JAN BERNING

As a subset to my letter scale collection, I have a collection of letter opener scales. I started collecting these little gems several years after I started collecting scales in 1977. My collection now numbers around 40 different letter opener scales. They are made from brass, bronze, nickel or chrome plated and colorful plastic.

The smallest and earliest letter opener scale was produced as a souvenir for the New Orleans Exhibition of 1884 and 1885. It is a combination postal scale, letter opener and cigar cutter. It was designed by Adler C. Clausen of Minneapolis, Minnesota, and was assigned patent number 314,801 (Figure 1) on March 31, 1885. Measuring 1" in diameter, the body was made of brass and the slip ring is stamped from flat spring-steel. Engraved on the front (Figure 2) is *Patent Applied for* above a pelican sitting on a nest and below that is a scale that is graduated from left to right 0 to 2½ ounces by ¼ ounce. On the reverse (Figure 3) is a



Figure 2. ▲▲ The front of the letter opener scale and cigar cutter.



Figure 3. ▲▲ The reverse.

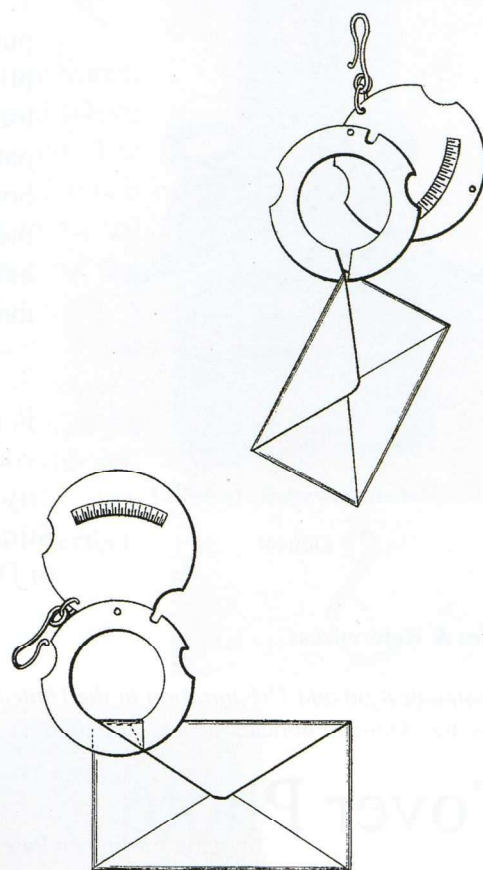


Figure 1. ▲▲ Patent drawings for Clausen's 1885 Patent no. 314, 801. It is a pendulum scale.

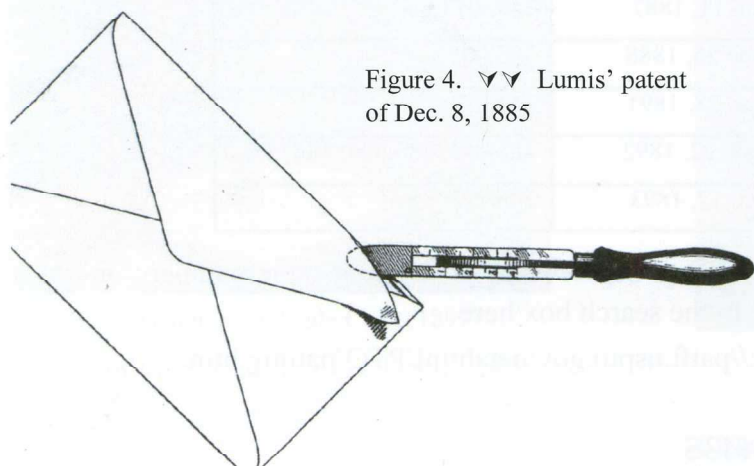


Figure 4. ▼▼ Lumis' patent of Dec. 8, 1885

laurel wreath surrounding an engraving of a man pushing a bale of cotton on a dolly; under that is *Exposition, New Orleans, 1884 & 85*.

A second letter opener scale was patented on December 8, 1885, by Thomas J. Lumis of Hartford, Connecticut. While no example has been seen of this flexure spring letter opener scale; it may have been produced. (Figures 4 & 5)

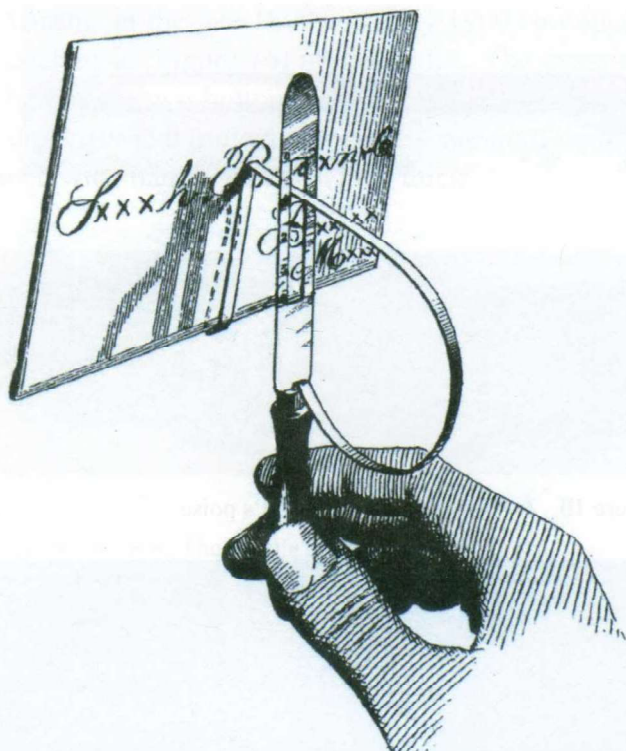


Figure 5. << This is figure 1 of Lumis' patent of 1885, showing the scale being used to weigh a letter.

If you happen to see one of the letter opener scales based on this patent, please contact the author or send photos..

French patent number 273,669 was applied for on December 11, 1897, by Robert Hamilton Read for a bismar letter opener scale. The letter clip and the support hanger were on a saddle through which the beam moved. The graduations are closer near the poise on the right and farther apart as they increase. The beam is graduated from $\frac{1}{2}$ to 20. Stamped into the front of the poise is Canada, Europe, U.S.A. Letters 2¢ Per Oz., Mdse 1¢ Per Oz., Pat. Pending. The reverse is stamped Read's Postal Balance, Office 44 Broad St., N.Y. It is made from nickel plated brass and measures 8½" long. (Figures 6—10.)

Figure 6. >> The drawing for French Patent number 273,669 .

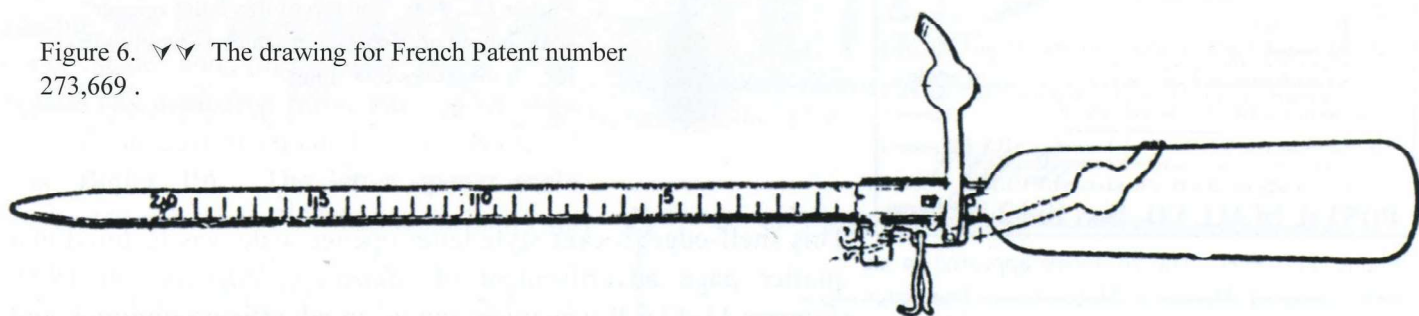


Figure 7. >> Read's Postal Balance, ready for use as a postal scale.

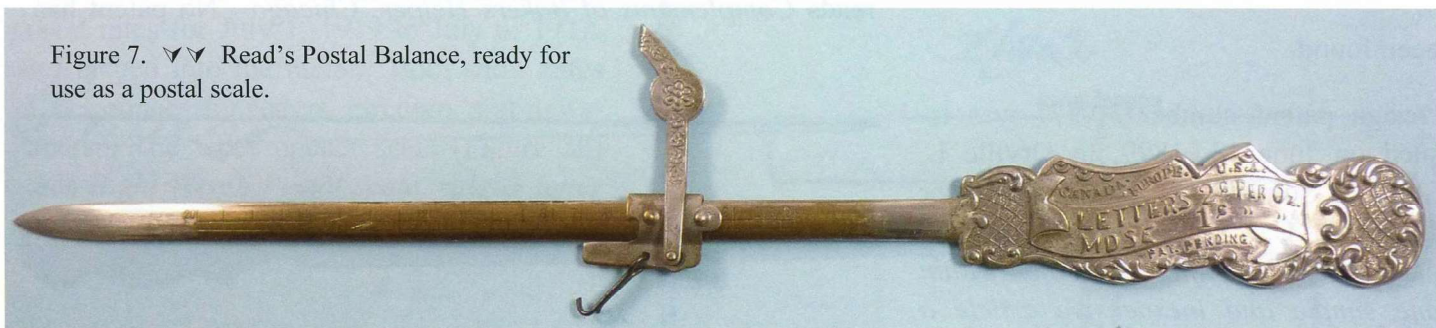




Figure 8. ▲▲ Read's Postal Balance ready for use as a letter opener.



Figure 9. ▲▲ The front of the Read's poise.



Figure 10. ▲▲ The reverse of Read's poise.

**What to get
A Man for
Christmas**

Our **NEW** **Desk Tool** { **POSTAL SCALE, LETTER OPENER, and PAPER KNIFE** in one.

which is a

Always handy, saves many a stamp on doubtful letters.

SAVES STAMPS

Set slide at 1 oz., etc. If scale tilts over at all, add postage.

Showing use as scale and as knife.

Nickel plated, highly polished, ornamental, and the only exact scale not costing several dollars.
Gives postal rates on under side.

Wrap a quarter in a full page of newspaper; put the whole in a letter; 2 cents will carry it. **25c.** (Postpaid)

If you want the very best, we have it in **SILVER**—heavy plate—extra fine finish, filigree ornamentation, \$1.00.

AGENTS AND TRADE SUPPLIED
POSTAL SCALE CO., Box 1642 New Haven, Conn.

Figure 11. ▲▲ The ad above appeared in an 1899 issue of *Munsey's Magazine*. The letter opener scale is pictured in figures 12 & 13.

been found.

Design patent number 30,977 was issued on June 13, 1899, to Orville L. Story of Somerville, MA for a Paper Cutter & C. The patent reads in part ...a device which combines within one simple and inexpensive article a paper-cutter, envelop-opener, and letter-scale. No example has been found to date. See figure 14.

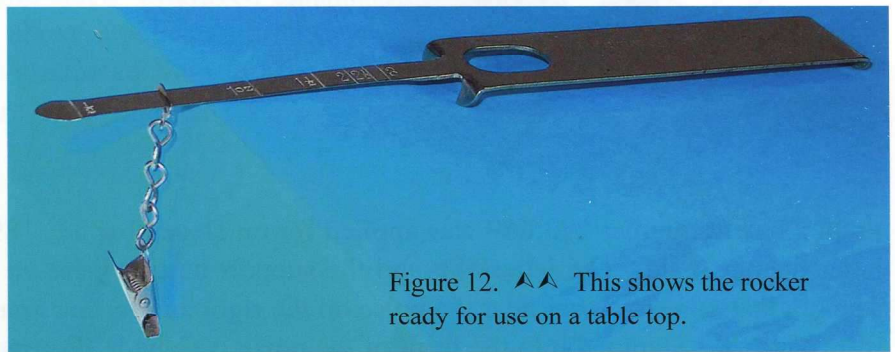


Figure 12. ▲▲ This shows the rocker ready for use on a table top.

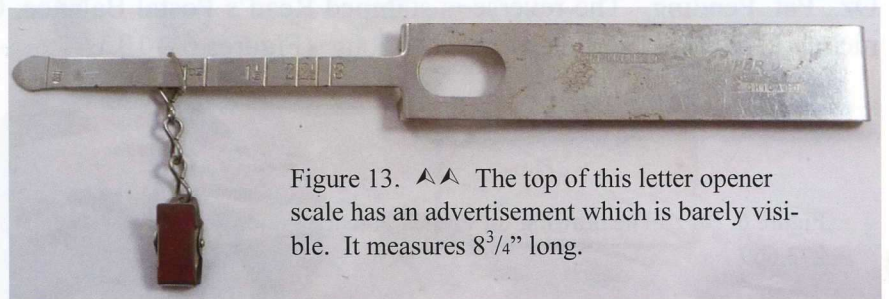


Figure 13. ▲▲ The top of this letter opener scale has an advertisement which is barely visible. It measures 8³/₄" long.

This shelf-edge, rocker style letter opener scale was featured in a quarter page advertisement of *Munsey's Magazine* in 1899. (Figures 11-13) It was given out as an advertising gimmick and reads *Complements of Bakers Helper, Chicago*. No patent has

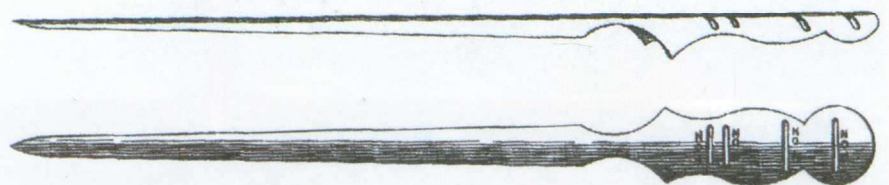


Figure 14. ▲▲ Story's patent showed these two drawings of his 1899 design for a letter opener scale.

Artisans in the late 1800s or early 1900s produced this heavy brass letter opener (Figure 15) with a one pound letter scale (Figure 16) in its handle. The exact maker and date of manufacture is unknown. It is assumed that there were two buttons on a fixed axle in the slot on the handle that were held between the users thumb and forefinger and moved along the scale until equilibrium was reached. The opener measures 9" long with a one inch wide handle that is $\frac{1}{8}$ inch thick.



Figure 15. ▲▲

Figure 16. ➤➤ The handle of this letter opener incorporates a 1 pound capacity scale. It is graduated from 1-8 by ounces with the pound capacity farthest from the point of the letter opener.



James K. Ritchie was issued patent number 1,622,924 on March 29, 1927 for a postal scale. The patent is for a postal scale and rule, but my collection has one postal scale example like the patent as well as a letter opener scale and rule. The postal scale (Figure 18) measures $6\frac{3}{8}$ ", has a four inch rule with an advertisement for First National Bank, Butler, PA. The letter opener scale (Figure 19) measures $7\frac{1}{8}$ " has a six inch rule with an advertisement for Guaranty Trust Company, Pittsburgh, PA. These rockers are made from brass with the advertisements and postal rates for July 1, 1919 to July 6, 1932. acid etched into the metal. Both show rates of 1-3 ounces for letters, circulars and newspapers. The letter opener scale (Figure 20) reads *Right Weigh Postal scale, rule & letter opener. Pat. Apl. For J. K. Ritchie, Butler, PA.*

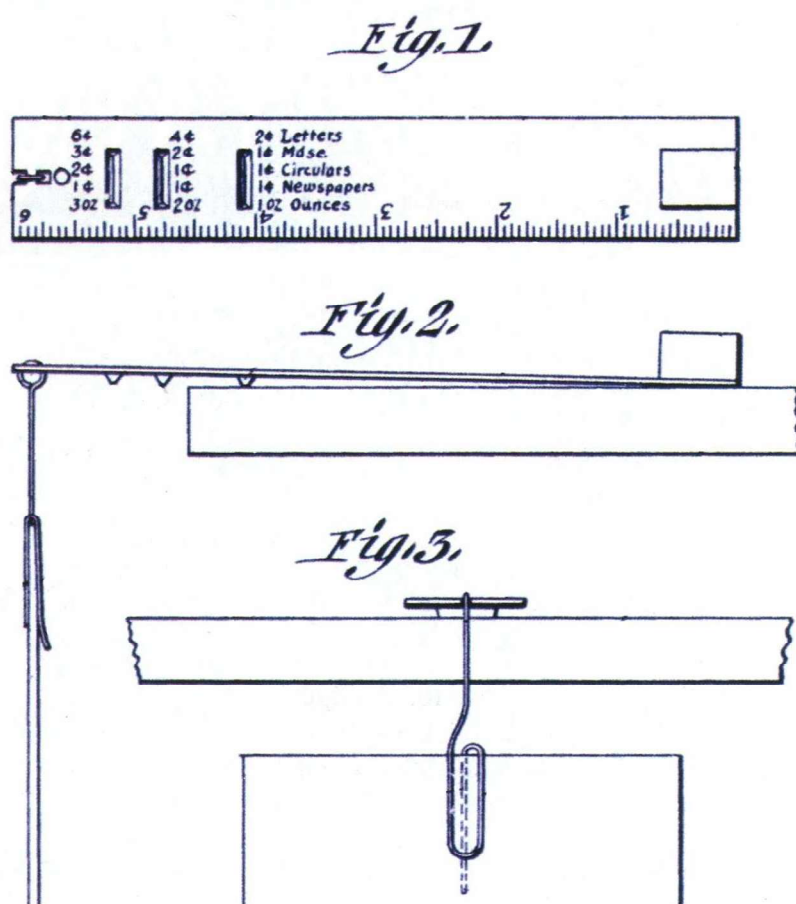


Figure 17. ➤➤ The patent drawings for patent number 1,622,924.



Figure 18.

◀◀

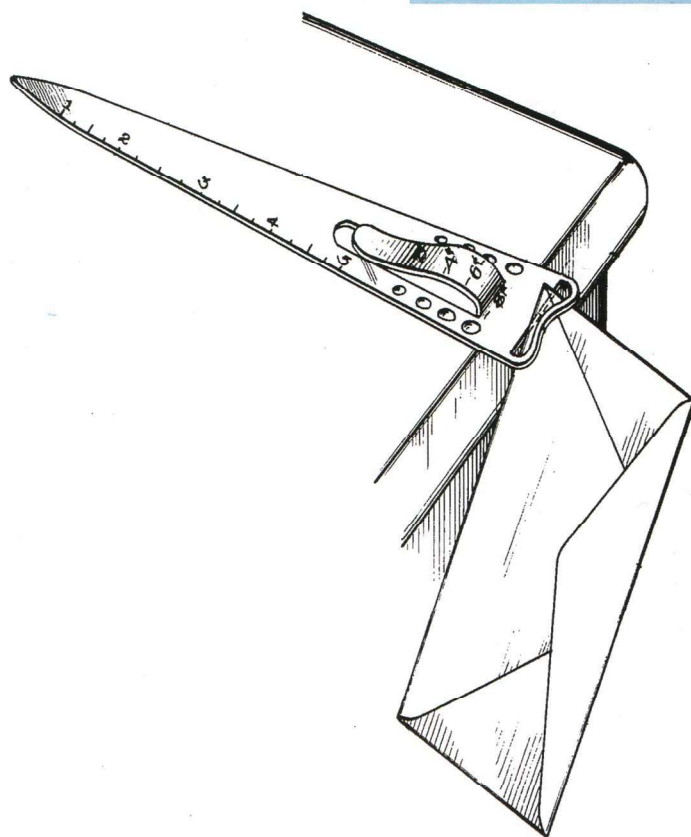


Figure 19. ▼▼

Figure 20. ▶▶ The end of the letter opener scale showing postal rates for Letters, Mdse., Circulars and newspapers.



Figure 21. ▼▼ Patent 1,843,934 drawing.



Patent number 1,843,934 was issued to Percy W. Stephens of Chicago on February 9, 1932 for a Letter Scale and Paper Cutter. The patent drawing (Figure 21) shows 4 pairs of feet to raise the scale above the table for the fulcrum points. The patent drawing also shows graduations by two cent increments from 2 to 8 cents.

This table edge rocker, (Figure 23) letter opener scale is made from copper, with three pairs of feet and graduations by ounce from one to three. The top of the example in my collection reads *HANG LETTER HERE AND BALANCE ON DESK, PAT. PDG.* (Figure 22) It measures $7\frac{3}{4}$ inches and is $1\frac{1}{4}$ inches wide at it widest point.



Figure 22. ▶▶ Top.



Figure 23. ▲▲ Stephens Letter Opener scale.